GAZETTEERS OF INDIA

TAMIL NADU STATE

KANCHEEPURAM AND TIRUVALLUR DISTRICTS
(Erstwhile Chengalpattu District)

Volume - I

Editor
M.GOPALAKRISHNAN

2000

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M. GOPALAKRISHNAN

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101-00

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Government of Tamil Nadu

Commissioner of Archives & Historical Research

Gandhi-Irwin Road,

Egmore, Chennai - 600 008.

Copies can be had from

Director of Stationery and Printing,

816, Anna Salai, Chennai - 600 002.

Printed by

Chennai Printers Industrial Cooperative Society Ltd.,

Chennai - 600 005

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SECRETARIAT
MADRAS - 600 009

Date 22 - 3 - 2000

FOREWORD

Of all the publications of the State Governments of Indian Union, the District Gazetteers find a unique place for its utilitarian value and for the uniformity adopted in the presentation and the contents in the encyclopedic form.

During my present tenure as the Minister for Education, I first had the privilege of releasing the first and second volumes of the Tiruchirappalli District Gazetteer and now this combined Gazetteer for the districts of Kancheepuram and Tiruvallur. These districts were carved out of the then Chengalpattu district, which is as old as that of the Madras Presidency. The area in and around Chengalpattu which was under the sceptres of the Pallavas, Cholas, Pandyas, Vijayanagar kings and the Nawabs of Arcot, was handed over to the British East India Company for their financial and military help rendered to the Nawabs in their fights against the Palayakars and the native rulers of south Tamil Nadu. This area was called Jahir and later demarcated as a district and placed under the administration of a Collector.

The district has the legacy of the Pallavas in the form of cave temples of Mamallapuram and several lakes dug by them to augment the irrigational facilities which earned the district the sobriquet of the ***district of lakes*** *and many temples of historically important architectural marvels as they were the foremost dynasty in the country to build temples using bricks and mortar.*

Madurantakam, now a taluk and revenue divisional headquarters of Kancheepuram district was the first headquarters of the Chengalpattu district and later it was shifted to Saidapet. Arignar Anna, then the Chief Minister of Tamil Nadu, (1967-69) transferred

The draft of the Gazetteer for the Chengalpattu district was finalised and approved by the Gazetteer Monitoring Committee and the Government before the bifurcation of the district into Kancheepuram and Tiruvallur districts. Hence, it is now published as a combined Gazetteer for the districts of Kancheepuram and Tiruvallur.

Save Charles Stewart Crole's Chingleput District Manual in 1879, Chengalpattu district has no pre-Independence Gazetteer. Hence, it becomes necessary that Kancheepuram and Tiruvallur districts, the composite Chengalpattu District should have a unitary Gazetteer.

The present Kancheepuram district, famous for Silk weaving preserves the rich historical, cultural and religious heritage. In fact, it was only from this district that the first Palaeolithic tool (the handaxe) in India was discovered by the pioneer prehistorian Robert Bruce Foote on 30 May 1863 at a ballast pit on the brigade ground at Pallavaram. Kancheepuram, besides being the capital of the Pallavas, and the birth place of Anna shines as a town of temples and sculptures and a centre of learning right from the early centuries. The Dravidian School of temple art is clearly exhibited in some early monuments such as the cave temples seen at Mamallapuram and Kancheepuram. The art form even spread to Indonesia and Campoochea as the Pallavas were great seafaring kings. These early monuments were followed by the exquisite shore temples at Mamallapuram and Kailasanathar temple at Kancheepuram. The Vimaana of the shore temple influenced the spires of Pagoda of South East Asia. The Sankara Mutt, temples, and big mosque in Kancheepuram, the Church in St. Thomas Mount, Eri Katha Ramar temple in Madurantagam and Adhiparasakthi temple in Melmaruvathur are considered by people, the holiest among the holy places. A Chola inscription in the Uthiramerur temple is the *magna carta* in the history of the development of local self government in the country.

Vedanthangal and Karikili bird sanctuaries, Arignar Anna Zoological Park in Vandalur and many other private theme parks like Kishkintha, VGP and MGM, Muttukadu Boating Centre, and Crocodile Bank are the feasts to the eyes of the tourists. Saidapet, Thiruvanmiyur, Meenambakkam, Guindy and other places though within the limit of Chennai city, administratively form part of Kancheepuram district. Anna International and Kamarajar Domestic Airports, Guindy Industrial Estate, many higher educational institutions, car manufacturing units etc., boost the district's economy. Location of Kalpakkam Atomic Power Plant in the district is the one more feather in the cap of the district. The river Palar, one of the five celebrated rivers of Tamil Nadu, lagoons, backwaters and the innumerable lakes which has earned the sobriquet of "lake district" to the composite district are the nature's boon to the district.

The Tiruvallur district is the north-eastern district of Tamil Nadu bordering Andhra Pradesh. The historical evidences in the district show that in the Red Hills and several adjacent areas near Poondi reservoir and on the south and north of the Kusasthaliyar river were the sites of ancient civilization. Several well shaped and well preserved implements were discovered in 1864 during the survey by Dr. Cornish, Frazer and Foote in the area. The places of historical and cultural importance in the district include Thiruninravur, Thiruvothiyur, Periyapalayam, Tiruttani, Thiruvalangadu, Tiruppalaivanam and Pulicat. The Tiruvallur district, to be more specific, the banks of the river Kusasthaliyar, is one of the cradles of Indian civilization as evidenced by the archaeological artefacts unearthed. The industrial wealth of the districts are many and some of them are SIPCOT, Gummidipoondi, Thermal Power Station, North Chennai, Madras Refineries and Madras Fertilizers, Manali, Ashok Leyland, Thermal Power Station, Enfield Motors and Ennore Foundaries, Ennore, Madras Rubber Factory, Cholavaram, Industrial Estate, TI Cycle Factory, TVS Group of Companies, Ambattur and Tank Factory, Avadi. Various incentives provided by the Government will place the district in the industrial map of the country.

Agriculture is the predominant occupation of these districts. Kusasthaliyar, Arnaniar, lakes and borewells are the sources of irrigation. The Poondi Reservoir and Puzhaleri, which the districts possess are the main drinking water sources to Chennai city.

Dr. K.S.K. VELMANI
Editor - Gazetteers
Tamil Nadu Archives
Chennai - 600 008
March 2000

K. INBASAGARAN, I.A.S.
Special Commissioner and
Commissioner of Archives

INTRODUCTION

The concept of Gazetteer has great strides in modern times, rendering its traditional definition *Geographical dictionary,* obsolete and inadequate. Now, Gazetteers stand for comprehensive source of information about a given area and the people who live there. It says everything worth-mentioning in order to make the reader understand the nature, style and standard of life in the given District or State.

In accordance with a framework given by the Government of India, the project of publishing a new series of post-Independence District Gazetteers was started in Tamil Nadu in 1958.

The post-Independence series present, *inter-alia,* authentic information of the district, its physical features, history, social, political and economic life of the people in general and the various developmental activities of the Government in particular.

Needless to say that the Gazetteer now serves as a guide to the administrators, a reference book for the general public and a source of information for the researchers and specialists. It is essentially inter-disciplinary and multi-purpose book.

The Manual of the district, which was the precursor for the district Gazetteer, was last written by C.S. Crole and published in 1879. After a lapse of 114 years, the district Gazetteer for the Chengalpattu - MGR District is now getting published.

Unlike other districts, - most of them have either been bifurcated or trifurcated, - Chengalpattu District, has in it an extensive area, with a number of industrial belts. So, compilation work is not an easy task indeed.

Thiru M. Gopalakrishnan, Editor - Gazetteers has taken enormous efforts to collect the materials required from various sources for compilation of the Gazetteer. He has highlighted the special features of the district in all the chapters. The statistical data collected by him, with great difficulty, from various offices over a period of two years have been collated and presented well. Strenuous efforts have been put in to gather rare photographs for presentation in the Gazetteer.

At every stage of the preparation and finalisation of the Gazetteer, the Editor consulted me and carried out the suggestions in every chapter.

The Chengalpattu District Gazetteer is the result of a good team work by the Editor and his Assistant Editors. This Gazetteer is yet another proof of the fact that diligent efforts never fail to bear fruit.

The fastest compilation of this work inspires us to complete the rest of the Gazetteers for other districts by adhering to the time schedule fixed by Government. I am also sure that speed will be a major objective, but, not at the cost of quality.

Tamil Nadu Archives
Egmore, Madras - 600 008
Date : 23 August 1993

M. PARAMASIVAM, I.A.S.
Commissioner of Archives and
Historical Research, Madras-8

PREFACE

The Chengalpattu District Gazetteer, - the eleventh in the post-independence series of district Gazetteers of Tamil Nadu, - is in your hands.

Needless to say that, Chengalpattu District is comparatively bigger in size. Many Industries have sprung up, in the outskirts of Madras city, which lie mostly in Chengalpattu-MGR District limits. The District comprises 13 Taluks, 27 Panchayat Unions, nine Municipalities, three Municipal Townships, 43 Town Panchayats and four Panchayat Townships, besides 1192 Village Panchayats. More than 700 offices and institutions in the district have contributed materials to this department, for compiling the Gazetteer. Fact remains that very little has been said so far, about the historicity of the district. This bears testimony that so much has been left over and there is much scope for deeper studies. I have spared no pains to elaborate upon what has already been said; and, where this could not be done to my own satisfaction, I have thrown enough light on the chasms of facts and views with the fond hope that students, who specialize South Indian History shall deal with them, in depth as and when they take their turn.

I was able to achieve the goal as far as this edition is concerned, only because of the help and cooperation rendered to me by a number of officers, specialists, intellectuals and institutions.

The guidance, encouragement and enthusiasm I received from Thiru M. Paramasivam, I.A.S., Commissioner of Archives and Historical Research, Madras, are invaluable indeed. So also, the successive Directors, Thiruvalargal A. Elangovan, I.A.S., T.R. Ramasamy, I.A.S., and K. Ganesan, I.A.S., guided me with proper perspective, in shaping the Gazetteer to the degree expected of. But for the personal association and involvement of the present Commissioner and Directors in finalising the various chapters of this book, I would not have completed this work, within this span.

I earnestly started collection of data for this book in the later half of 1990, when Thiru Sameer Vyas, I.A.S., was the Collector of the district. His personal involvement in the work, and also the interest evinced by his successors - Thirumathi Sheela Priya, I.A.S., and Thiru K. Gnana Desikan, I.A.S., in the collection of details for the book, should certainly be placed on record.

I also acknowledge my thanks to the various Heads of Departments, Government Undertakings, Heads of Offices in the district, various agencies, Central Government Organisations and scholars in the district, who extended their cooperation, by providing us necessary materials.

The contribution of Dr. V. Raghava Rao, the Director of Tribal Research Centre, Tamil University, M. Palada (near Udhagamandalam) to the Chapter on PEOPLE, is worth-mentioning.

The Linguistic Department of Bharathiar University, Coimbatore, under the able leadership of Dr. K. Karunakaran, conducted a special survey of linguistic peculiarities, the folklore of Chengalpattu District for the Gazetteer. This survey report annexed to the Chapter on PEOPLE will be very useful for the scholars.

I will be failing in my duty, if I don't mention the valuable guidance given by Dr. P. Jagadeesan, Dr. K.V. Raman and Dr. B. Shanmugham of Madras University and Dr. C.S. Krishna of Tambaram Christian College, in shaping the chapter on HISTORY, well.

The help I so much needed was forthcoming in ample measure, particularly from Thiru A. Kuppuswami, Scholar, Sri Kanchi Kamakoti Muth, who contributed, among other things, a very valuable write-up to the Chapters on HISTORY, EDUCATION, PLACES OF INTEREST and PUBLIC LIFE AND VOLUNTARY SOCIAL SERVICE ORGANISATIONS and a vivid account on Kanchi Muth and a number of temples in and around Kancheepuram.

My profound thanks are due to Dr. K.V. Lakshmi Narayanan, Dr. K. Rama Devi and Dr. T.S.N. Moorthy, Zoological Survey of India, Madras, for their contribution of FAUNA, Tvl. D. Narasimhan, Tambaram Christian College and A.N. Henry, Botanical Survey of India, Coimbatore, for their contribution on FLORA of the district for the Chapter on GENERAL and to Dr. Romulus Whitekar, Director, Centre for Herbatology, Mamallapuram, for his contribution for the chapter on PEOPLE and EDUCATION.

I must not omit to make a special mention about the contributions of Superintending Archaeologist, Archaeological Survey of India, Madras, Director-General of Meteorology, New Delhi, Deputy Director-General of Geological Survey of India, Director of Anna Institute of Management, Madras, Librarians of Madras Institute of Developmental Studies, Madras University, Connemara and Archaeological Survey of India Libraries, Commissioner, Hindu Religious and Charitable Endowments, various educational institutions in the district, Lead Bank Officer and a number of voluntary agencies in their respective spheres, for compiling the book.

The services of Thiru Thamarai Kannan of Acharappakkam in having spared a number of source materials, for some of the chapters, can't be forgotten.

Grateful thanks are due to Mrs. Uma Devi, journalist, Kancheepuram, for her personal involvement, particularly for the chapters on HISTORY and PLACES OF INTEREST.

My indebtedness is correspondingly heavy; to the late Thiru G. Ramasamy, formerly District Revenue Officer - Managing Director, Padalam Sugar Mills, who strained every nerve, in collecting materials required for the Gazetteer not only from his side but from other officers also in the district. He shouldered the strain of accompanying me during the course of my tour of the district, and rendered valuable assistance to me in making my tour, a grand success.

The credit goes to my staff members - Thiruvalargal K.S.K. Velmani, R. Sinnakani, Tmt. V. Manmathavalli, Thiru N. Govindaraju and Tmt. R. Nalini, (Assistant Editors), Thiru M.P. Raghunathan and Tmt. Nasreen Sultana (Office Superintendents), Tmt. V. Gomathi and Thiru P. Rajarethinam (Assistants), Tmt. R. Vasantha (Personal Assistant), Thiru R. Chandrasekaran (Senior Reader), Tmt. P. Geetha (Copyholder) and the Typists of the Fair Copy section of Tamil Nadu Archives, - without whose assistance and cooperation - I could not have completed this book. The staff members of this Archives in various stacks, Machine section and Binding section, under the guidance of the efficient Assistant Commissioners and those in Archives library under the able leadership of the Librarian have extended their cooperation in compiling and shaping the Gazetteer, to the satisfaction of the Commissioner.

Some of the chapters are based primarily on published sources and the work of earlier authors in the field to which references are given at the end of the Gazetteer.

As far as possible, this book has been updated and all areas covered. Yet, a few aspects might have been missed or left unnoticed. Hence, we wholeheartedly welcome every suggestion and comment on this book as they would help us improve the standard of our future publications.

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Date :18 August 1993

M. GOPALAKRISHNAN
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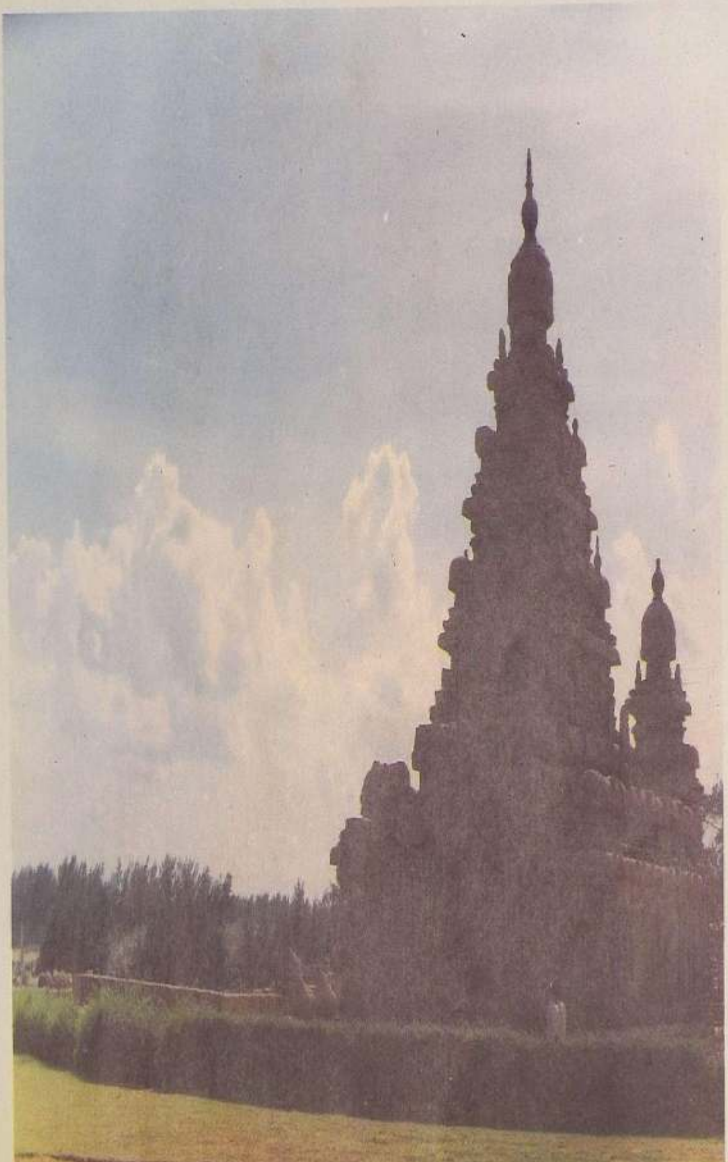

Shore Temple, Mahabalipuram

CHAPTER-1

GENERAL

The landscape of today's Chengalpattu-M.G.R District formed the core part of the ancient Tondainadu or Tondaimandalam as it was known then. Following the reigns of the Pallavas, Cholas, Pandyas and the Vijayanagar kings, it became the domain of the Mughals, placed under the immediate control of the Nawabs of the Arcot. Muhammed Ali Wallajah, the Nawab of Arcot, the Deccan Subedhar of the Mughal Government, conferred this area, then comprising about 16 *pergannàs* on the British East India Company in 1760 as the reward 'for (their) services rendered to him and his father'[1]. This is regarded as the first important territorial possession in South India for the East India Company. The conferment was ratified by the Emperor Sha Alam in 1763[2].

Origin of the name of the district

The area was then known as *Jahir* and later (around 1800 A.D) when the British re-organised their acquired territories as administrative divisions, the districts came into being in the Madras Presidency and the *Jahir* became the Chengalpattu district named after the town of the same name situated in the district.

Chengalpattu, which literally means 'lilly pond village (செங்கழுநீர்பட்டு) has been mentioned in Sanskrit literature as *Kuvalayapura* meaning water lilly town. The British mostly called a district after the name of the town in which the headquarters of the district was located. But, in the case of Chengalpattu, it was not so. Karunguzhi, now administratively an insignificant village near Madurantakam, served as the headquarters of the district from the beginning up to 1859, when it was shifted to Saidapet. Since then, (except for a decade between 1825 and 1835 during which Kancheepuram, the historical capital of the Pallavas and other kings, served as the headquarters of the district) Saidapet was the headquarters of the district until 1967. The headquarters of the district was shifted to Kancheepuram in 1968, from where it still functions[3].

Chengalpattu district, the first of the districts demarcated by the East India Company for their revenue administration in the state, continued to bear the name till 1990 when it was renamed as the Chengai-Anna District, after C.N. Annadurai*, a former Chief Minister of Tamilnadu who hailed from Kancheepuram, the present headquarters of the district. The 'prefix' *Chengai*

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* C.N. Annadurai was affectionately - addressed as "Anna" to mean elder brother. For details refer to the Chapter on "People".

was shortened form of Chengalpattu. Later in 1997, the district was re-christened as Chengalpattu-MGR district in memory of late M.G.Ramachandran, who was also a former Chief Minister of Tamil Nadu.

Location

Chengalpattu-MGR district, the north-eastern border district of Tamil Nadu State, lies between north latitudes 12°15' and 13°28' and east longitude between 79°28' and 80°20' rendering the district of Chennai as an enclave[4].

Being a littoral district, encircling the district of Madras which is abutting the coast of Bay of Bengal, it is bounded on the east by the Bay of Bengal and the Madras district, on the north by the Nellore district of Andhra Pradesh, on the south by the Villuppuram Ramasamy Padaiyachiar district and Thiruvannamalai Sambuvarayar district and on the west by the North Arcot Ambedhkar district of Tamilnadu and Chittoor district of Andhra Pradesh.

Total area and population of the district

The total area of the district is 7867. 16 sq.km[5]. The major change in the territorial jurisdiction of the district after Independence was in 1960 when the Pataskar Award was implemented with effect from 1 April 1960 by which 283 villages, two towns, (Tiruttani and Pallipattu) and a part of a village, hitherto formed part of the Chittoor district of Andhra Pradesh were transferred to Tamil Nadu and consequently annexed to the district. In turn, 72 villages from Ponneri taluk, and 76 villages from Tiruvallur taluk of the district were transferred from Tamil Nadu to Andhra Pradesh[6].

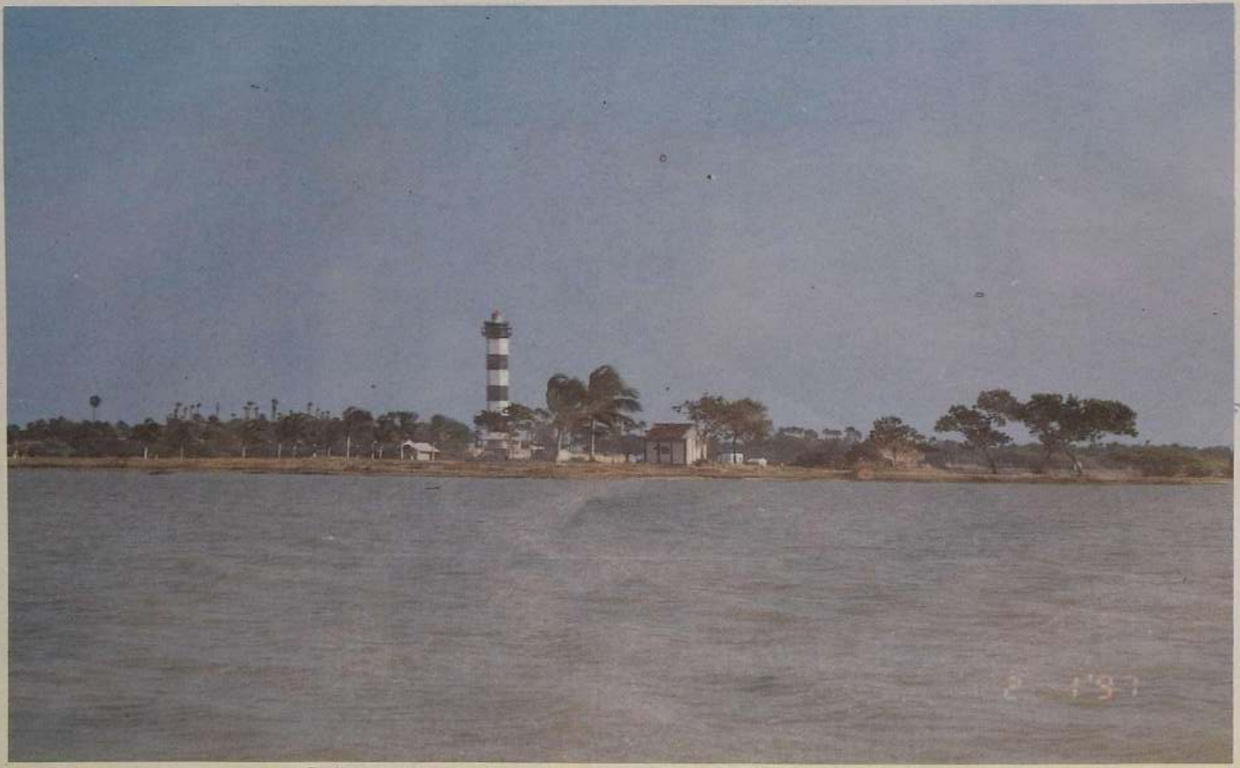
Another important change took place in this district in 1978, when about 40 sq.km. of Saidapet taluk of the district was transferred to Madras district[7].

The City of Madras is expanding and so was the jurisdiction of the district of Madras. The expansion of the Madras district was at the cost of jurisdiction of the Chengalpattu-MGR district.

The population of the district as per the 1991 Census is 46,20,967 of which 23,61,071 are males and 22,59,950 are females[8]. The density of population per sq.km. works out to 588. The decennial growth rate of the population for the decade, 1981-91, is 27.77 per cent.

Revenue divisions and taluks

For the purpose of revenue and general administration the Chengalpattu - MGR district has been divided into four divisions *viz.* Chengalpattu, Kancheepuram. Tiruvallur and Saidapet comprising 13 taluks. They are Chengalpattu, Madurantakam, Cheyyur, Kancheepuram, Sriperumpudur, Uthiramerur, Tiruvallur, Tiruttani, Pallipattu, Uthukkottai, Saidapet, Ponneri and Gummidipoondi[9]. For the administration of Local



Pulicat - lagoon with the light house in the back drop

bodies, Rural Development, Education, Police, Law and Order and Justice, Cooperation, Public Works, Forests, Industries, etc., the department - concerned have formed their own divisions in the district commensurate with their administrative convenience[10].

Topography

The district is a featureless peneplain with residual hills extending parallel to the coast (N.20-30°E) ranging in elevation between 16 and 230 metres. This forms the zonal of pediments and buried pediments with maximum number of surface/storage tanks. The coastal tract is marked by three beach terraces ranging in elevation between 4 and 12 metres with broad inter terrace depressions[11].

Natural Divisions

Geographically, the area can be divided into the plains,lagoons, hilly regions, forests, coastal belt, rivers, basins and the lakes and tanks.

The Plains

The Bay of Bengal skirts the entire eastern border of the district for about 185 km. except for a distance between Ennore and Adayar which forms the eastern hem of the Madras district. Generally, the coastal belt of the district is flat with gentle slope towards the east or seaward; dreary near the sea and undulating and rarely hilly elsewhere. The general level ranges from below the sea level near some of the backwaters and gradually rises up to 300 ft., above the mean sea level in the western part of Kancheepuram and Tiruvallur taluks. The plains in the district covers roughly a triangular area of which the coastline between Pulicat and Sadras is the base and Kancheepuram the apex. The regions hemming the sea are flat, tame and dreary consisting of marshes, lagoons, small bays and backwaters[12].

Lagoons

Of the numerous lagoons or backwaters of all sizes, the principal one is the Pulicat lake which is situated in the north eastern corner of the district. It has an extreme length of about 60 km. in the northern end of the lake, touching the Nellore district of Andhra Pradesh. The breath of the lake varies from 5 km. to 18 km. The river Arni makes its confluence in the southern end of the Pulicat lake. South of the Pulicat lake and north of the point, at Ennore where the river Korattalaiyar confluences with the Bay of Bengal, is another big lagoon which is partly dry.

About 5 km. north of Kovalam,-a coastal village,- has formed a lagoon which extends toward south and terminates at 0.5 km. north of Mahabalipuram. Further south are rather extensive lagoons in Yedayanthittu, Kalinelli and Kalivelli tank. All are brackish water lagoon but much influenced by heavy rains which fall generally during the north east monsoon.

Hills

The north western and south eastern parts of the district are hilly which form part of the Eastern Ghat. The hills and hill ranges, except a few in extreme north and north west of Ponneri and Tiruvallur taluks, rarely attain an elevation exceeding 700 ft., and do not present a scenery nor contribute to any appreciable change in the climate of the region. The Allikuli hills in the north west, contributes a little of the appearance of mountains. The character of the hill ranges consisting of quartzites of Cuddappah age, is *bluff ridges and beetling cray* with ridges here and there steeply starting tapering peaks. Generally, the cliffs are seen without vegetations, while on the sloping areas, are grass and bushes.

The elevation of the Allikuli hill is 1020'. Along the slopes of the hill are located several caves which once sheltered the stone age man.

The south eastern part of the district comprising Madurantakam, Cheyyur and Chengalpattu taluks, is having undulating plains traversed by several ridges of low hills stretching parallel with the coast for about 32 km., at a distance of 12 or 14 km., inland. They are ridged or conical or ellipsoidal hills rarely exceeding 600 ft. in height. The hillocks consisting of very ancient crystalline gneisses of the Peninsular occur in groups in the taluks of Saidapet, Chengalpattu, Sriperumpudur, Kancheepuram and Madurantakam.

Forests

Forests plays a vital role in human life as its wealth in abundance has its influence over the economy and ecology of the people and the land. At the dawn of the world civilization, forests provided both food and shelter to the mankind. Later, the mankind cleared the forests slowly to make way for other facilities. The clearing process either went unnoticed or failed to attract the attention of the administrators for millions of years as the deforestation was even claimed by the kings as an agricultural reform[13].

The indispensability of the conservation of forests was realised by the British administration of the Madras Presidency in 1847 when an Executive Engineer of Malabar reported to the government that the forests of Malabar and Coimbatore were being denuded of timber by the merchants and accordingly, he recommended that some arrangements were necessary to preserve them. Pursuant to his recommendation, the first Conservator of Forests of the Madras Presidency was appointed in 1856[14]. The next major breakthrough in the forest conservancy of the state was the passing of the Forest Act for the Madras Presidency (Act No. V of 1882) which came into force in January 1883. This is the first Act passed in the then Madras Presidency to conserve the forests.

Pulikundram - a hillock

A enshrined in the Act, the select forests of the Presidency were declared Reserve Forests. In the former Chengalpattu district, Vandalur forest was the first one to be notified as a reserve forest in the year 1886. In the following years, deserving forests were declared as Reserve Forests and as in 1988 there are about 108 - Reserve Forests in the district covering a total area of 34984.22 ha[15]. Besides the Reserve Forests, are also Reserve Lands in the district to the total extent of 9660-39 ha., covering about 72 places. A list of Reserve Forests and Reserve Lands is appended to the chapter in *Appendix - 1*.

Area under Forests

Out of the total geographical area of Tamil Nadu, covering 1,30,057 sq.km., an area of 22, 552 sq.km., is covered by forests which works out to 17.33 per cent while the figure for the Chengalpattu-MGR district is six per cent as the total geographical area and forest cover of the district are 7903 sq.km., and 486 sq.km., respectively[16]. Out of the total forests of Tamil Nadu, the district covers only 1.83 per cent - the 14 district in the order of the Forest Wealth[17].

During the year of passing of the Madras Forest Act, 1882, the total area of the notified reserve forests of the district was above 135.0 sq.km.,

The forest area of the district as recorded in the Census reports was 487.5 sq.km. in 1951, 342.5 sq.km. in 1961, and 446.6 sq.km. in 1981.

An analysis of the available statistics will go to show that the percentage of the forest area of the district to the total geographical area is fluctuating between 5 and 6 since 1951. The forests of the district has been broadly classified into *plain forests* and the *hill forests*.

The plain forests

The major parts of the forests of the district are in the plains which are characterised by nearly level stretches of land traversed by rivers and streams. Many of the reserve forests situated in the plains also contain small isolated hillocks *e.g.* Thirukalikundram, Vandalur, Acharapakkam and Pullikaradu Reserve Forests. An interesting feature of these forests is that they have mostly been converted into commercially valuable cashew and eucalyptus plantations, during the past two decades.

The hill forests

Allikuli hill tract in the western part of Ponneri taluk, which forms part of Eastern Ghats is the only area in the district to have hill forests. Some of the exposed slopes of the hills in the district also have patches of bushes.

The natural forests in the district are in a degraded condition and most of them have been converted into cashew and eucalyptus plantations.

A vast extent of reserve lands in Tiruvallur taluk are barren and they serve only as a low quality pasture land for the cattle in the villages. As a result, the villages in this taluk face a chronic scarcity of fuel and timber. Since Third Five Year plan period, efforts are made to afforest the suitable government lands. The species with which the forests have been raised in the district, are Acacia-arabica (in water - logging sites) acacia leucoploea (in saline alkaline sites) and Eucalyptus texeticornis. The grazing area of the district aims to provide adequate pastures for cattle at nominal rates. The area in Vandalur Reserve Forest is permanently closed for grazing to ensure calm life for the inmates of the Arignar Anna Zoological Park, (Vandalur).

Cashew is the most important produce as it is grown extensively in the forests of this district. The fuel requirement of the districts of Chengalpattu-MGR and Madras is considerably met by the forests of the Chengalpattu-MGR district. In about 500 hectares of the district, fuel woods, *viz.,* Casuarina and Eucalyptus are planted and felled rotatively in an interval of five years.

As this district abuts the city of Madras, the population of the metropolis look for their housing sites in the Chengalpattu-MGR district, since the beginning of this century which has consequented on the disappearance of lakes, forests, wet lands and grazing grounds of the district, giving way to the house sites. The increase in population needs more biomass in the form of wood fuel and on the other hand, the biomass producing lands are shrinking. To compensate this, about 600 ha., of forest lands where cashew plantations failed, have been converted into productive energy wood plantations. The plantation work was commenced from June 1988. The species selected are Casuarina equistsfolia, Acacia junginnai, Acacia leucofhlooce, Acacia, arrulifonnis, Winghtia tinctaria, Neem, Punga, etc.

An ecological model has been formed at Vandalur Reserve Forest with a view to create a three storeyed forests with indigenous dry deciduous species. A public-*cum*-feeder nursery is maintained in this model farm for raising all the timber species, fruit bearing trees, ornamental trees, bamboos etc. The model farm serves as a demonstration plot for Ecologists, Agriculturists and Botanists.

The district can boast of an impressive list of avi and acquatic fauna, like spotted deer, black buck, wild bear, hare and partridges quails in the patches of existing natural forests. Wild life other than water birds is scarce in the district; since the forest flocks are small, scattered amidst populous villages, their vegetation is degraded with no proper water sources during summer. During the winter, all tanks in the division and backwater *(i.e.,)* Vedanthangal, Karikili, Pulicat, etc., attract not only indigenous birds but also migrating birds from the cold countries of northern latitudes.

Types of Forests

On the basis of the types of vegetation, the categories of the forests of the district can be classified as follows:-

Sl. no.	*Description*	*Area in sq. km.*	*Percentage to the total forests of the district.*
1.	Southern Dry Mixed	26.17	5.86
2.	Southern Thorn Scrub	66.91	14.98
3.	Southern Euphorbid scurb	108.55	24.30
4.	Tropical dry evergreen scurb	71.14	15.93
5.	Cashew plantation	103.67	23.21
6.	Eucalyptus plantation	43.98	9.85
7.	Other plantations	26.23	5.87
	Total forest area	446.65	100.00

Forest policy of the government

The Constitution of India stipulates *inter-alia*, that State shall endure to protect and improve the environment and to safeguard the forests and wild life of the country[18]. The protection of forests has been included in the list of fundamental duties which reads thus:-

"It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion to living creatures"[19].

Besides, the Indian Parliament have passed specific Acts such as Forest Conservation Act, 1980, and the Environment (Protection) Act, 1986, in which is enshrined the policy of the government relating to forests and wild life.

Forest Administration

The Chengalpattu-MGR district forms the Chengalpattu Forest Division comprising the five territorial forest ranges of Tiruvallur, Tambaram, Kelambakkam, Chengalpattu and Madurantakam and special ranges, Tiruttani Plantation Range, Chengalpattu Plantation Range, Checkpost Range, Surveilence Range, City Beautification Range and Head Quarters Range.

The forest division is headed by a district forest officer assisted by an assistant conservator of forests, 11 forest range officers, 36 foresters, 41 forest guards, 36 forest watchers and other ministerial staff[20].

National Forest Policy

In a resolution, dated the 12 May 1952, the Government of India, in the erstwhile Ministry of Food and Agriculture enunciated a Forest Policy to be followed in the management of State forests in the country. However over the years, forests in the country have suffered serious depletion. This is attributable to relentless pressures, arising from every-inadequacy of protection measures, diversion of forest lands to no-forest uses without ensuring compensatory afforestation essential environmental safeguards and the tendency to look upon forests as revenue earning sources. The need to review the situation and to evolve, for the future, a new strategy of forest conservation had become imperative and consequently the national forest policy was reviewed and later revised in 1988.

It is also stipulated that the principal aim of forest policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which are vital for substenance of all life forms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim.

The forest policy of the Government of Tamil Nadu by and large falls within the framework of the National Forest Policy. Taking into account of the forestry of the district, its environmental condition, ecological and biological needs, economic condition, dependency of the local population on the forest produce and grazing lands, etc., the Forest Policy of the Government of Tamil Nadu for each forest division has been formulated and accordingly the working plans and prepared for each district by competent authorities. In the plans, the Forest Policy of the Government of Tamil Nadu towards the District Forests are discussed and plans and schemes to be implemented in the district are highlighted.

The Forest Policy of the Government of Tamil Nadu towards the forests of Chengalpattu-MGR district as given in the latest working plan for the Chengalpattu Forest Division. (1976-77 to 1986-87) is given below:

1. To maintain the forests in a state of increasing productivity for obtaining the maximum financial return per hectare[21];

2. To attempt to meet at least partially the agricultural pastorals and domestic needs of the local population and the State's need for industrial raw material;

3. To take all measures to ensure the conservation and improvement of natural resources of soil, water and wild life;

4. To exploit with due regard to silvicultural and horticultural principles, the resources of the forests;

5. To augment the forest resources, raising farm or village forests; and,

6. To preserve as natural reserves certain portions of the natural forests for recreational and educational purposes.

For more details of "Forests", the chapter on "Agriculture and Irrigation" may be referred to.

Though the forest cover of the district seems insignificant, the Department of Forests spares efforts to implement the Forest Policy of the government. The government promptly utilised the aids of Swedish International Development Authority for raising the social forestry.

Implementation of the policy in the district

Management of forests conserves the basic land resource, besides yielding a high level of production. Protection and development of forests are necessary for the survival of human civilisation. Development without destruction and protection with production are the main objectives of this division. Forests have a vital role in maintaining the delicate balance of the Ecological System. In order to conserve and develop the forests in this division, the thrust is directed mainly towards (i) Conservation forestry, (ii) Restoration forestry; and (iii) Production forestry[22].

Conservation forestry

In conservation the emphasis is on absolute protection of ecologically sensitive areas gifted with rich diversity of fauna and flora and habitat improvement. Allikuli Reserve Forests of this district has been covered under this scheme for the future prosperity.

Restoration of forestry

In restoration of forests, the emphasis is said on biological upgradation of the degraded forest areas through systematic artificial and natural regeneration, by gap planting, aerial seeding and other techniques that gives as much importance to natural regrowth as to that which is planted. The scheme is being implemented in this division in full swing. During 1991-92, 1000 ha., were covered in Tiruvallur Range of this Division (Maddur R.L. and Nedium R.F.) through aerial seeding.

Production forestry

In forestry production, the thrust is on improving the productivity of the existing plantations by replacing the growing stock with fast growing, genetically uniform and superior clonal material. This will be under intensive management with a package of practices to get improved production.

On the one hand, the increase in population needs more biomass in the form of wood fuel and on the other hand, biomass producing land is

shrinking and more and more lands are being taken away from production. Hence, there is need for a multipurpose strategy to tackle these problems. The forest area is being alloted to wood fuel production and productivity of wood fuel has to be increased by adopting high input technology diverting the existing pulpwood.

Measures for the preservation of wild life

Protection of wild life is one of the main objectives of the Government Forest Policy. The latest enactment for the preservation of the wild life is the Wild Life (Protection) Act, 1986. As per this Act, Karikili in Madurantakam taluk and Pulicat in Ponneri taluk have been notified as Bird sanctuaries. Accordingly, the Wild Life (Protection) Act, 1986 is enforced in these sanctuaries. Vedanthangal near Karikili is a century old sanctuary.

Sea coast and ports

As the Bay of Bengal borders the district in the east, the district has a sandy coast of about 182 km. Along the coastal strip are beaches, casuarina groves, lagoons, backwaters and in some places coconut groves. The bottom of the sea for about half a kilometre from the shore is generally loose and interspersed with strong rocks and beyond that the ground is rocky and strong. The depth of the sea within two km. is up to 200 feet from the shore, and away from that the depth increases gradually[23]. Parallel to the sea coast is flowing the Buckingham Canal.

Mamallapuram presently an international touristic spot flourished as the principal port of the Pallava dynasty who held sway over the district from seventh century to the middle of the ninth century. When the Europeans came to South India, Pulicat, Sadras, Kovalam and Ennore were their port of call. The Europeans had built godowns in Sadras and Pulicat to store their merchandise of export and imports the remains of which can still be seen in Sadras.

Rivers, basins, lakes and tanks

Rivers

The rivers Palar, Cheyyar, Cooum, Coratalaiyar (or Kusasthalaiyar) Arniar, Kiliar, Kallar, Ongur, Nandi and many rivulets run through the district. Of these, the river Palar is regarded as one of the major rivers of Tamil Nadu on lines with Cauvery, Vaigai, Pennai, Porunai and Tamirabarani. These rivers though not perennial get inundated by monsoon rains[24].

The Palar

It is the chief river in the district. It rises in Nandidurg of Karnataka State and enters Tamil Nadu after flowing about 93 km. in Karnataka State[25].

A view of the dilapitated Fort and the Tomb stones, Sathurangappattinam (Sadras)

In Tamil Nadu it runs for about 295 km. through the North Arcot and Chengalpattu-MGR districts. This river enters the district about a few km. to the west of Kancheepuram. The river Cheyyar joins the river Palar at Tirumukkudal about 13 km. east of Kancheepuram. The rivulet Vegavathi which runs in Kancheepuram also joins the Palar. After running 48 km., from Thirumukkudal it confluences with the Bay of Bengal at a place five km., south of Sadurangappattinam (Sadras). The river is capricious and uncertain in its course. For harnessing the river a dam has been built in Wallajabad. (North Arcot Ambedkar district).

The Cheyyar

The river Cheyyar originates in the *Javvadu* mountains of North Arcot Ambedkar district, flows in the Chengalpattu-MGR district and confluences with the river Palar at Tirumukkudal.

The Corataliyar or Kusasthaliyar

The surplus water of Kaverippakkam tank of North Arcot-Ambedhkar district flows in the name of the river Corataliyar. The river, on its course is also contributed by many tanks and jungle streams,Mahendranadhi and Toppur, of the district of North Arcot Ambedhkar. In its course in the north easterly direction, it is joined by the Tiruttani and Nagari rivers and enters the Poondi Reservoir, a source of drinking water supply to the city of Madras. From Poondi Reservoir, the river serves as the channel to bring the drinking water to Cholavaram and Red Hills tanks. At the place where the river comes out of Poondi Reservoir, is built the Sathyamoorthy Sagar. A dam is built across the river at Tamaraipakkam, from where a channel branches off, carrying water to Cholavaram tank. Similar Dam is built at Vallur also. The river, while flowing through Tiruvallur and Ponneri taluks, fills up many tanks, Finally, the river joins the Buckingham canal near Ennore, to the north of the city of Madras forming the Ennore Creek.

The Arni river

The Arni river rises in Andhra Pradesh and flows into the district. It marks the boundary between Ponneri and Tiruvallur taluks. The river runs north of the town of Ponneri and mingles with the Pulicat lake.

The Cooum river

The surplus water of the Cooum tank, named after the village in which the tank is situated, joining with a channel which carries surplus water from the Kaveripakkam tank of North Arcot, runs as Cooum river. On its course, it irrigates the riparian villages. It feeds the Chembarambakkam tank, through a channel, enters Madras city and joins the Bay of Bengal.

The Adayar

The Adayar river originates in Guduvancheri village. It assumes appearance of a stream only after it receives surplus water from the Chembarambakkam tank and the drainage channels. The river enters the Madras city and mingles with the Bay of Bengal near Adayar.

Buckingham canal

There were two canals in the district in the early part of the 19 Century and they were Cohrane's canal named after the contractor who undertook the completion of the canal which extended up to Andhra Pradesh starting from the Cooum river and the East Coast canal which connected Pappanchavadi in Chengalpattu-MGR district and the mouth of the river Palar. Both the Cohranes and East Coast canals had been extended from time to time towards north and south respectively. But Duke of Buckingham during his Governorship of the Madras Presidency connected both these canals by fresh excavations of about eight km. through the heart of the city of Madras. The excavation project was executed as a famine relief work of 1877-78. Thenceforth, East coast canal, Cohrane's canal and the newly excavated canal are altogether called as Buckingham canal. This canal was once used as a means of waterway[26]. Now, the canal is not suitable for communication as it is very shallow and in many places it is broken. It is used as a drainage canal.

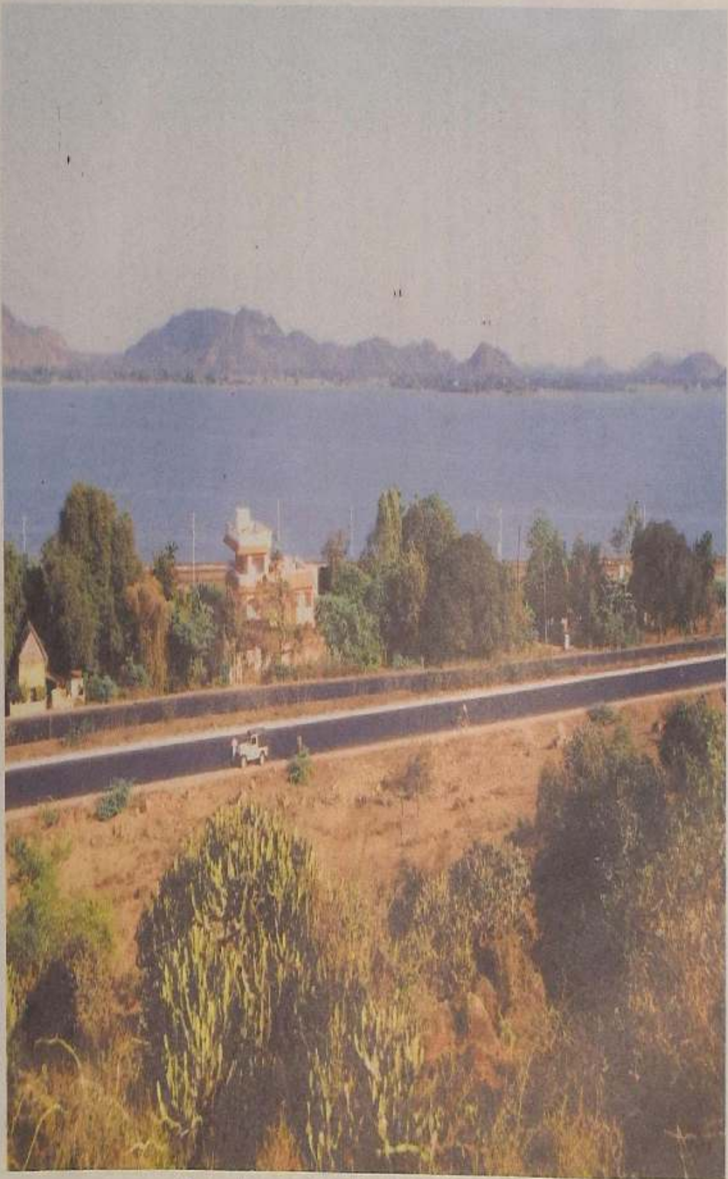
River basins

The rivers and tributaries that flow in the district have their basins. Achirappakkam and Sidhamur of Madurantakam taluk from the basin of rivers Ongur and Kiliar. Lathur of Madurantakam taluk is in the basin of the river Kallar. Uthiramerur, Kancheepuram, Wallajabad, Thirukalikundram, Kattankolathur and Thirupporur are located within the ambit of the Palar river basin. The river Corataliyar has its basins in Tiruvallur and Ponneri taluks. The northern portion of Ponneri taluk forms the basin of the river Arni. None of the rivers in the district is navigable. Buckingham canal was used as a waterway during the 19 Century.

Tanks and lakes[27]

The Chengalpattu-MGR district has a sobriquet of 'District of lakes' owing to the location of multitude of lakes and tanks including the major ones at Chembarambakkam, Madurantakam, Uthiramerur, Thenneri, Sriperumpudur, Thinnanur, Sholavaram, Puzhal, Poondi, Pallavankulam, Thamal and Palur[28].

There are about 4324 lakes in the district of which 1459 are under the care of the Public Works Department and the remaining are maintained by the local bodies. The tanks are harnessed for irrigation purposes. The Poondi



Paranur lake - one of the lakes from the District of lakes

Reservoir or Sathyamoorthy Sagar and the tanks at Puzhal and Red Hills are the sources of drinking water supply to the city of Madras.

Chembarambakkam tank

Chembarambakkam tank is the biggest in the district. It is in Sriperumpudur taluk. It is one of the oldest tanks in the district. The rivers Cooum and Corataliyar are distributories to the tank. The total length of the banks of the tank is 8.8 k.m.

Thenneri

It is the second biggest tank in the district. It is said that the tank was excavated by a Pallava king, 'Thiriyan', and called after his name as "Thiriyaneri", which later corrupted into Thenneri. Another view is that it was formed by a Chola monarch and as the Chola came from the south, the tank was called as 'Thennavan Eri' which later bacame 'Thenneri'. The embarkment of the tank is 3.6 km.

Uthiramerur tank

It is one of the oldest and biggest tanks of the district. According to a Chola inscription of 9 Century found in the Vaikundaperumal temple at Uthiramerur, a separate department or 'variam' was nominated by the local government of the place to maintain the tank. The length of the banks of the tank is 7.20 km.

Madurantakam tank

It is one of the important tanks of the district. The tank was formed across the river Kiliyar in Madurantakam. Formerly, there were two tanks and they were converted into one large tank by Lionel Place during his tenure of office as Collector of the district in 1796. This British Official has taken a lot of interest in improving the tank and succeeded in it. This Calingula is said to be one of the finest works of its kind in South India. It is built in the form of wave line and the height from the crest to the bed of the river below, is 30 feet. The southern portion especially is very curious and beautiful specimen of masonry. There is a tablet with the inscription giving the details of the construction of the tank by Lionel Place in 1798. Tradition has it that the presiding deity of Madurantakam town, Lord Rama is celebrated as the "Eri Katha Ramar". (The Lord Rama who guarded the lake). The story behind it is that in 1795 when there was a cyclone the Madurantakam tank was fearedy to be breaching. Lionel Place, the then collector while inspecting the tank bund stayed for a while in the temple were he found a heap of bricks and as he questioned why the bricks were for, the temple priests told him that they were for the construction of the temple for the consort of the Lord Rama. It is said that Place remarked with redicule whether the Lord Rama would protect the lake bund. A few days later, when there was a heavy rain,

Place and his officials rushed to the lake and while he was walking, he stood rooted suddenly to a spot gazing with a sense of wonderment at the gushing waters. He told his subordinates that there were two youths holding bows and wearing quiver, with a halo of effulgence around them guarding the lake. Impressed by the divinity the Collector ordered the immediate construction of a temple for the consort of the Lord Rama. The temple was constructed and above the door of the temple there is an inscription saying that the temple was built by Lionel Place[29]. The embankment of the Madurantakam tank is four km.

Sriperumpudur tank

This is also one of the biggest tanks in the district located in Sriperumpudur. The length of the banks is 3.8 km. The tank is filled by the Kambakkal channel, a branch of Kovindavadi channel which is a distributory of river Palar. Besides the biggest tanks, there are also big tanks in Thinnanur of Sriperumpudur taluk, which receives water from the river Cooum, Pallavankulam tank of Madurantakam taluk, filled by the river Kallar, Thamal tank of Kancheepuram taluk and Palur tank of Chengalpattu taluk of the district.

Poondi Reservoir or Sathyamoorthy Sagar in the Poondi village of Tiruvallur taluk, formed in the course of the river Korataliyar, is the main drinking water source for the city of Madras. From Poondi Reservoir, water is drained to Cholavaram and Red Hills tanks. From Red Hills tank, water is brought to Madras city.

The total number of tanks in each taluk of the district under the control of the Public Works Department are 163 in Kancheepuram, 77 in Uthiramerur, 171 in Madurantakam, 115 in Cheyyar, 207 in Chengalpattu, 124 in Saidapet, 77 in Uthukkottai, 123 in Tiruvallur, 70 in Tiruttani, 35 in Pallipattu, 132 in Ponneri and 87 in Gummidipoondi[30].

Mention also has to be made about the Vedanthangal and Karikili tanks situated in the Madurantakam taluk, as they attract water birds world over. These tanks get inundated speedily even with a moderate rains and they are shallow, and teemed with preys for the birds.

Underground water resources

A study conducted by the Ground Water Division of the Public Works Department on the ground water resources of the district reveals that the average annual ground water recharge in the district is 1,82,934 h a.m. while the extraction is in the order of 1,11,706 h a.m.

The weathered thickness observed in select wells in the district varies from 3 to 10m. The maximum weathered thickness is noted in Madurantakam taluk and the minimum in Kancheepuram taluk. In sedimentary terrain,

Kulavoyal lake, Chengalpattu.

(tertiary formations) namely the shales and sandstone, the thickness ranges from 10m. to 13m. and in alluvial deposits, the thickness of alluvium ranges from 5m. to 60m. in the Korataliyar and in the Cooum river courses. The thickness of the Palar river alluvium ranges from 10m. to 30m[31].

During summer,the water level recorded is 6.5m to 9.78m. while it is 1m. to 2 m. during winter.

The electrical conductivity value is generally high in the coastal area *(i.e)* the north of the city of Madras and it varies from 500 to 2000 micro omhes at 25°C. Based on the S.A.R. values, it is found that most of the districts have good quality water fit for irrigation, having S.A.R. value of 5m. below. Only in a small patch in the north eastern part of the district *(i.e)* along the northern coast, the S.A.R. values are found to be higher than 5.0m.

Groundwater potential in the Araniyar and Palar areas

The river Araniyar is passing through alluvial formations and hence, the recharge to groundwater storage is fairly uniform over the entire area covered by alluvium. A total of 27.5 mgd. has been estimated as the overall groundwater potential of the area, the break-up being 7.5 mgd. for Minjur area., 9 mgd. for Panjetti area and 11 mgd. for Tamaraipakkam area. At present, the combined potential is in the order of 18 mgd. This is because of increased development of ground water for agricultural and industrial purposes. The groundwater potential in these areas is used for the various industrial units situated north of Madras and partly to supplement water supply requirements of the city of Madras.

In the case of the Palar river which runs through hard rock terrain recharge to ground water storage takes place up to 500m. distance on either side of the river. This is due to narrow alluvial spread available. Hence, the ground water potential is localised and restricted to a few places in the river bed where sandy alluvial accumulation is appreciable. Such places have been identified in the following locations and the estimated potentials are furnished.

i. Palar-point confluence (4.5 mgd); ii. Near Chengalpattu-bridge (1 mgd); iii. Paiganallur (6.2 mgd).

With a view to safeguard the interest of the existing water supply schemes in Palar bed, Palar Basin Rules, a set of regulations, have been introduced by the Government of Tamil Nadu to streamline the present ground water tapings. Except for brackish water in some shallow dug wells in and around Kancheepuram town, the quality of groundwater in the Palar river is good. The quality of water generally improves from west to east.

Classification of blocks

As per the norms fixed by the Ground Water Estimation Committee set up by the Government of India, the Blocks in the state have been categorised as *dark, grey* and *white,* based on the level of groundwater extraction. A block having extraction up to 65 per cent of the available annual recharge is categorised as white, a block having the extraction in the range of 65-85 per cent is termed as grey and in dark area blocks the extraction is more than 85 per cent of the annual recharge.

The details of the dark and grey blocks in Chengalpattu MGR district as in January 1992 are as follows:

100 per cent (over developed - Dark)	*Between 85 and 100 per cent (dark)*	*Between 65 per cent and 85 per cent (Grey)*
1. R.K. pet	1. Sholavaram	1. Madurantakam
2. Poondi		2. Villivakkam
3. Minjur		3. Poonamalle
4. Thiruvalangadu		4. Lathur
5. Thiruvallur		5. Tiruttani
6. Madhavaram		

The remaining blocks in this district are classified under white category.

Blockwise ground water potential in the district is given in *Appendix-2.*

The study further reveals that the quality of the ground water in certain pockets of the Palar basin area is poor. This is due to local pollution of the river water and ground water caused by the discharge of untreated effluents from tanneries and other industries located in this region.

The Ground Water Wing of the Department of Public Works offers consultancy services to the Government, and *quasi* Government departments, agriculturists and to the general public. Under this scheme favourable locations for dug wells or bore wells are selected based on detailed geophysical surveys. For this service, a nominal fee is collected. The department is in a position to render the consultancy services, as it has made an indepth study on the subject.

Based on the detailed investigation carried out by the department, three potential well fields were identified and production wells were constructed in the above identified area namely Minjur well fields Panjetty well field and Tamaraipakkam well field. Initially, from these well fields, ground water to the tune of 27.5 mgd. was supplied by the department to the various industries. In the year 1969, when there was a severe drought, the ground

water wing supplied about 2300 million gallons of ground water as emergency water supply to Madras city. Similarly, during 1970-71, 1974-75, 1975-76, a quantity of about 8500 million gallons of ground water was supplied from Panjetty and Tamaraipakkam well fields. Now, these production wells have been handed over to the Metropolitan Water Supply and Sewerage Board for meeting the water supply requirements of Madras city and the industries in and around the city.

Ground water to the tune of 3 MGD per day is being supplied by this department to Madras Atomic Power Station, Kalpakkam, from Panakattuchery well fields situated in the Palar basin.

Geology

The Archeans represented by charudeite are exposed in the southern and south eastern parts of the district. In the central and the western parts of the district upper Gondwana rocks are seen. Along the coastal tract of the district are soil and alluvium continental. Upper Gondwana sediments in the southern part and the marine sediments in the southern part and the marine sediments of lower Cretaceous age in the central and north eastern parts and laterite cappings over parts of both upper Gondwana and marine sediments are noticed in the district.

The revised classification[32] of the stratigraphic succession both continental and marine sediments in the district is given below:

Age	*Group*	*Continental*	*Marine*
Holocone to recent	-	Quaternary deposits, *viz.* alluvium, laterites Palaeo channels deposits and Conjeevaram gravels.	Quaternary deposits; *viz.* laterites, alluvium, deposits of Palaeo channels Tidal Flats, sand dunes and Conjeevaram gravels.
Mio-Pliocene	-	Cuddalore Formation	-
Lower Cretaceous	Upper Gondwana	Sriperumbudur Formation, Satyavedu formation Unconformity	Avadi Formation.

Permian	Lower Gondwana	Talchir Formation Unconformity	
Precambrian	Archaean	Archaean	Archaean

Archaean is represented by Charnockites, migmatites, granite gneisses, dolerites, pink and grey granites and pegmatites. The Archaean is overlain unconformably by the Talchir Formation represented by the following rock types, *viz.*, boulder bed, dirty white to greenish coloured, fine to coarse sandstone, siltstones, compact, indurated greenish shales and rhythmite. Talchir sediments occur in the southern and south western fringe of the Palar Basin. The Talchir Formation is overlain by continental upper Gondwana sediments *viz.*, Sriperumbudur Formations. Apart from continental upper Gondwanas, marine sediments of lower cretaceous age, represented by the Avadi formation occur in the east and north eastern part of the district, All those three formations are laterally intertwining with each other and they consist of similar plant and Palynofossils of lower cretaceous age. Therefore, those formations are considered as contemporaneous "equivalent". Basically, all these sediments comprise cyclic sequences of sandstone, siltstone and shale.

Mio-pliocene sediments *viz.*, the Cuddalore Formation comprises molted sandstones, varieagated clays and poorly consolidated sandstones/ aquifer sands. Occurrences of Cuddalore Formation are noticed in the south eastern part of the district.

The lower cretaceous sediments are extensively covered by the Quaternary Formations, comprising alluvium, Conjeevaram gravels, laterites, tidal flat deposits, etc.

Mineral Resources - Occurrences

Clays, Kankary limestone, quartzite silica, sand and minor mineral occurrences have been recorded from this district[33].

Clays

In this district, the clay occurrences mostly belong to the Formation called Upper Gondwana (Shales). In general above the clays, there is an overburden consisting of sandstones ranging in thickness from 1.5m to 3m. Detailed investigation including pitting and large scale mapping at Vallam, Mathur, Vaiapur, Edapalaiyam, Kilacheri, Mappedu, Sattavai, Kallambedu, Kannur, Kannanthangal and Komanthangal has been carried out and the reserves are estimated to be of the order of 12.9 million tonnes up to 5m to 7.5m. depth; of this 10.5 million tonnes are of refractory grade. Investigation

carried out in Tiruvallur taluk, has led to tracing of clays amounting to 12.43 million tonnes up to a depth of five metre. These clays are not of refractory grade and may as well be used in the manufacture of stoneware pipes, tiles, jars, etc.

Kankary limestone

Kankary limestones are derived from igneous or sedimentary rocks by solution and redeposition as nodules or as cellular material called tufa. They are limited in thickness and they vary in composition. The State Geology Department, Government of Tamil Nadu has investigated kankar deposit four km. east of Ottivakkam, Thirukalikundram, Kalathur and Sembakkam and estimated 1,30,000 tonnes of ore reserves with Calcium Oxide content, ranging from 32 to 47.39 per cent. The kankar occurs generally below a lateritic soil.

Quartz

Quartz crystals are reported to occur on the slopes of the Kambakkam hills.

Salt

Sea water in the backwater regions of the coastal town like Chunampet, Cheyyur and Kovalam is utilised for making common salt.

Moulding sand/white sand and gravel and silica sand

White sand and gravel deposits occur between Nanganarkuppam and Nallur. The thickness may be 2 to 3 metres. White to grey silica sands underlie the wind blown coastal sands and occur as a geological horizon along the Coramandel coast, between Madras and Pondicherry. Eleven linear zones of silica sands have been traced and marked. The length of the silica sand zones varies from 1 to 11 km. the width from 25 m. to 1 km. and the thickness from 0.40 m. to 3 m. The silica sands are mainly made up of rounded to sub rounded grains of quartz with very little weathered felspar, clay and heavies. A total of 10.75 million tonnes of indicated reserves of silica sands have been estimated from all the zones. Good glass making and foundry sands are available in the area.

White sands occur within the Cuddalore sandstone on the western slopes of the high ground between Nanganarkuppam and Kottaikadu and the eastern slopes between Kadappakkam and Kottaikadu. The horizon occurs interbedded with Cuddalore sandstone ranging in exposed thickness from 0.50 to 2.25 m. The indicated reserves of the raw white sand up to 5m. depth from the surface are of the order of 0.82 million tonnes. The sand is good enough for foundry moulding purpose. A total of 58,000 tonnes of white sand occur north of Tiruvottiyur over a provided area, 4.4 km. long and 480 m. wide.

Ochre and Red Earth/Oxide

About 15 to 30 cm. thick red-oxide cappings over the Gondwana formations are seen at (I) southeast of Sunkuvar Chatram (II) around Vallam and Mettupalaiyam and (III) around Earaiyur.

Pyrrhotite

Sulphides, consisting mainly of pyrrhotite with rare specks of pyrite and chalcopyrite, occur in association with quartz veins which are embalmed mostly along the contacts of a norite body with the country rocks near Narayanapuram over an area of 0.58 sq. km. The groove samples showed only 50 to 300 ppm. copper and less than 50 ppm. nickel.

Lime Shell

A thin layer of about 10 to 15 m. thick shell deposits occur west of Kovalam under cover to 0.9 to 1.2 m. of clay, forming the fringes of the long narrow back water. The total quantity of the shell will be in the order of about 1,000 tonnes.

Earth Tremors

Chengalpattu in Tamil Nadu State lies in a zone which is affected by earthquakes less frequently. From records available with the Indian Meteorological Department it appears that no significant earthquake was reported to have occurred in Chengalpattu-district during the last 200 years. The following two earthquakes have occurred in the southern part of the Deccan which caused some damage near the epicentres. One of them occurred on April 1, 1843 (Magnitude between 5.5 and 6.0) with its epicentre near Bellary and was felt widely over Deccan Plateau. The second occurred on February 8, 1900 (Magnitude 6.0) with its epicentre near Coimbatore. This earthquake was widely felt over South India and caused some minor damage at Coonoor, Coimbatore and Mysore City[34].

The tectonic frame work shows that the area is situated in the eastern margin of the peninsula. Study shows that the coastal area were uplifted in the quarternary period and the bottom of the Bay of Bengal subsided. The contact of these area, which have different signs of movements, is situated near the coast in the zone of the self and its oceanic slope. Faults are believed to exist in these areas where earthquakes may originate. Swarm type of activity in the area is attributed to local coastal adjustments.

Following the Koyna earthquake of 10 December 1967 (Magnitude 5.9), a Committee of Experts under the auspices of UNESCO made a detailed investigation of Deccan tectonics. These studies indicated that earthquake shocks along the eastern margin of peninsular plateau were due to differential motion/uplifting. The resultant strain is thus accumulated and manifested occasionally in earthquakes.

Considering the past seismic history and tectonic features as mentioned above and earthquake frequency studies made by Indian Meteorological Department, it is felt that Chengalpattu and its neighbourhood may experience seismic intensity VI on M.M. Scale for consolidated foundations in future earthquakes. This view is further corroborated by the seismic zoning map of India prepared under the auspices of Bureau of Indian Standards in collaboration of Indian Meteorological Department and other Institutions of earth scientists and engineers where the area under consideration has been shown in Zone-II which corresponds to a maximum seismic intensity of VI on M.M. Scale.

It may be mentioned that seismic intensity VI on M.M. Scale corresponds to a horizontal acceleration range of 5-175 Cm/Sec.^{2} or an average acceleration of 40 Cm/Sec.^{2} in any horizontal direction. This wide range of acceleration is due to the fact that ground acceleration at a place is largely dependent upon the nature of the foundation existing at a site. The earthquake damage to the buildings founded on unconsolidated soil or filled up earth may be larger than a similar type of buildings having their foundations on granitic or hard rock. The seismic factor to be applied in the design of structures, therefore, depends largely on the nature of foundation available at the site. It depends upon the type of structures and economic aspects.

Sl. no.	*Date*	*Description of earthquake*	*Intensity**
1.	*2.*	*3.*	*4.*
1.	12.08.1889	Slight shock; direction appeared; west to east; duration 3-4 secs. Felt in Saidapet, Pallavaram, St. Thomas Mount (suburbs of Chennai within a radius of 10 km.) where houses felt shock. The shock was sharp in the suburbs and was accompanied by noise like an ordinary distant clap of thunder.	IV
2.	26.06.1941	The earthquake was felt for about 15 sec. People working in upper storey offices rushed out. Electric fans suddenly stopped, and then resumed running. Open doors and windows alarmed with a bang. Parked cars moved on their own. Things placed on shelves rattled and fell down. Tumbles and almirahs in a hospital rocked. Mangalore tiles, rafters and reapers cracked.	VI

1.	2.	3.	4.
3.	10.04.1966	Tambaram and its neighbourhood have experienced a series of earth tremors accompanied by sounds of explosion. On the night, doors and windows rattled, small articles placed on table toppled to the ground and children were scared. Three tremors were felt and recorded by Meenambakkam Observatory. Tremors were also felt at Meenambakkam, Pazavanthangal, Chrompet and Pallavaram.	V
4.	20.10.1966	Tambaram felt four tremors between 7 and 10 p.m. Windows and doors rattled. The tremors were accompanied by a loud thud noise. Felt in Chrompet also.	IV
5.	04.03.1967	Tambaram was rocked twice at 8 pm and 8.15 pm. The tremors were accompanied by a thud noise. Doors and windows were rattled. Duration of the shocks was felt for a few sec.	IV

* *Intensity IV :* During the day felt indoors by many, outdoors by a few, at night some awakened, dishes, windows, doors disturbed; walls make creaking sound, sensation like heavy truck striking the building; and standing motor cars rocked noticeably.

* *Intensity V :* Felt by nearly every one; many awakened; some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned; disturbance of trees, poles and other tall objects noticed sometimes; and pendulum clocks may stop.

* *Intensity VI :* Felt by all, many frightened and run outdoors; some heavy furniture moved; a few instances of fallen plaster or damaged chimneys; and damage slight.

Details of Earthquakes in the district

Date	*Latitude*	*Longitude*	*Magnitude in Richter Scale*	*Location of epicentre*
29.01.1822	12°	79°	5.00	Most part of the district
02.08.1823	13°	89°	5.00	Sriperumpudur
01.07.1916	13°	77°	5.00	Most part of the district
12.10.1959	16°	80°	5.5	-do-
10.04.1966				
11.04.1966	12.55°	80°	..	Tambaram
21.10.1966				
22.10.1966				
27.03.1967	15.60°	80°	5.2	..
03.12.1987	15.50°	80.2°	4.5	Parts of the district
21.03.1988	14.40°	80.2°	4.1	-do-

Source : 1. Report from the Geological Survey of India *Ops.* Tamil Nadu, Madras, dated 20, August 1992

2. Report from the Director General of Metrology, Government. of India, New Delhi, dated 21, December 1992.

FLORA

The flora of the Chengalpattu-MGR district has about 1150 species and infra specific taxa belonging to 131 families[35].

The vegetation of this district is broadly grouped into five major types: 1) Scrub jungles; 2) Psammophytic vegetation; 3) Halophytic vegetation; 4) Mangrove vegetation; and, 5) Aquatic vegetation.

1. Scrub Jungles

Scrub jungles as they are popularly known are seen throughout the district. The discontinuous stretch of Eastern Ghats found in Tiruvallur, Uthukkottai and Pallipet taluks and hillocks and hills around Tambaram, Chengalpattu and Madurantakam taluks, harbour thick scrub jungle vegetation.

The scrub jungles are also included under tropical dry evergreen forests. They are also often named after the dominant elements that occur in the forests as *Albizia - Acacia* series. The scrub jungles can be further classified into the following types:-

i) *Scrub woodland* :- This type includes more trees. It is found in places like Allikuli and some parts of Madurantakam, Tambaram and Chengalpattu taluks. The tree species, include *Albizia lebbeck* (L.) Willd., *A. amara* (Roxb.) Boivin., *Diospyros chroloxylon* Roxb., *Lannea coromandelica* (Houtt.) Merr., and *Syzygium cumini* (L.) Skeels. Lianas and woody climbers that are found are *Capparis sepiaria* L., *Cissus vitiginea* L., *Combretum albidum* G. Don, *Derris scandens* (Roxb.) Benth., *Hugonia mystax* L., *Ventilago madraspatana* Gaertn. and *Tinospora cordifolia* (Willd.) Miers ex Hook. f. & Thoms. The dominant shrubs are *Allophylus serratus* (Roxb.) Kurz, *Canthium dicoccum* (Gaertn.) *Teijsm.* & Binn., *Memecylon umbellatum* Burm. f., *Glycosmis mauritiana* (Lam.) Tanaka, *Diospyros ferrea* (Willd.) Bakh., *Dichrostachys cinerea* (L.) Wight & Arn., *Gmelina asiatica* L., *Maytenus emarginata* (Willd.) Ding Hou. and *Securinega leucopyrus* (Willd.) Muell. Arg.

ii) *Continuous thorny thicket* :- These forests are scattered throughout the district particularly around Poondi, Vandalur, Vennangupattu, Pallipet and Thirupporur. Trees are a few and scattered. *Lannea coromandelica* (Houtt.) Merr. is the common tree species of this type. *Acacia leucophloea* (Roxb.) Willd., *Dolichandrone falcata* (Wall. ex. DC.) Seem., *Wrightia tinctoria* (Roxb.) R. Br. are some of the other tree species which occur. *Pterolobium hexapetalum* (Roxb.) Sant. & Wagh is the most common straggling shrub. The other common shrubs are *Benkara malabarica* (Lam.) Tirvengadum, *Canthium parviflorum* Lam., *Carissa spinarum* L., *Psilanthus wightianus* (Wight & Arn.) J. Leroy, *Ziziphus oenoplia* (L.) Mill. The climbers include *Abrus precatorius* L., *Asparagus racemosus* Willd., *Gymnema sylvestre*

(Retz.) R. Br. ex Schultes, *Ichnocarpus frutescens* (L.) R. Br., *Hemidesmus indicus* (L.) R. Br. and *Rivea hypocrateriformis* (Desr.) Choisy.

iii) *Discontinuous thorny forest* :- This is characterised by the total absence of trees. Shrubs are scattered. This forms the periphery of the previous type and is subjected to intense human interference. The open ground is covered with grasses and herbs during the monsoon season. They include *Aristida setacea* Retz., *A. hystrix* L. f., *Heteropogon contortus* (L.) P. Beauv., *Lepidagathis cristata* Willd., *Dipteracanthus prostratus* (Poir.) Nees, *Justicea glauca* Rottl., *Rostellularia prostrata* (Roxb. ex Cl.) Majumdar and *Tephrosia purpurea* (L.) Pers.

iv) *Scattered shrubby facies* :- This is the most degraded forest type and can be seen in places around Chengalpattu, Tambaram, Achirupakkam and Tiruttani. *Euphorbia antiquorum* L. forms the most dominant element with a very few scattered shrubs.

2. Psammophytic vegetation

Chengalpattu district has a long stretch of coast line and a few rivers which have dry sand bed for most part of the year. *Spinifex littoreus* (Burm.f.) Merr., *Ipomoea pes-caprae* (L.) R. Br., *Launaea sarmentosa* (Willd.) Schultz, *Euphorbia rosea* Retz., *Cyperus arenarius* Retz. are some of the major psammophytic elements. *Calamus rotang* L., *Pandanus odoratissimus* L. f. are also seen along the sea coast. *Citrullus colocynthis* (L.) Schrader is commonly found in most river beds. *Tamarix ericoides* Rottl. is common in Palar river bed near its mouth.

3. Halophytic vegetation

This is commonly found in Pulicat, Kattupalli, Ennore, Kovalam, and places around Sadras. The consistent species are : *Arthrocnemum indicum* (Willd.) Moq., *Salicornia brachiata* Roxb., *Suaeda maritima* (L.) Dumort., *S. monoica* Forssk. ex Gmel., *Artiplex repens* Roth, *Sesuvium portulacastrum* (L.) L., *Aeluropus lagopoides* (L.) Trin ex Thw., and *Cressa cretica* L.

4. Mangrove vegetation

Backwaters of Ennore, parts of Buckingham canal and scattered pockets around Sadras are the places where this type is found. *Avicennia marina* (Forssk.) Vierh., is the only tidal mangrove species that is found. *Excoecaria agallocha* L. and *Thespesia populnea* (L.) Soland. ex Correa are some of the other trees that could be found around mangroves.

5. Aquatic vegetation

The Chengalpattu district is known for its numerous lakes and ponds and it harbours some of the biggest lakes of the state.

Free floating hydrophytes are chiefly represented by *Lemna perpusilla* Torrey, *Spirodela polyrhiza* (L.) Schleiden, *Pistia* stratiotes L., *Eichhornia crassipes* (Mast.) Solms-Laub., *Neptunia oleracea* Lour and *Ludwigia adscendens* (L.) Hara.

Suspended hydrophytes include *Utricularia aurea* Lour., *U. stellaris* L.f., *Ceratophyllum demersum* L. etc.

Rooted hydrophytes with floating leaves are represented by *Nelumbo nucifera* Gaertn., *Nymphaea nouchali* Burm. f., N. *pubescens* Willd., *Aeschynomene aspera* L. and *Potamogetan nodosus* Poir.

Rooted submerged plants include *Blyxa octandra* (Roxb.) Planch. ex. Thw., *Ottelia alismoides* (L.) Pers. and *Vallisneria natans* (Lour.) H. Hara.

Semi-aquatics which predominently occupy marshy places and shallow waters are *Aponogeton natans* (L.) Engl. & Krause, *Monochoria vaginatis* (Burm.f.) Presl., *Limnophila indica* (L.) Druce, *L. polystachya* Benth., *Limnophyton obtusifolium* (L.) Miq., *Scheenoplectus articulatus* (L.) Palla, *Crinum defixum* Ker-Gawl., *Polygonum glabrum* Willd. and *Barringtonia acutangula* (L.) Gaertn.

6. Grasses and grazing lands

There are about 150 species of grasses recorded in Chengalpattu-MGR district - which is nearly 13 per cent of the total flora. Extensive fields, numerous water bodies and open scrub jungles offer an excellent habitat for grasses in this district. However, only about three per cent of the total area is available for grazing. This is very inadequate for the large cattle population of the district. The following grasses have been identified as important native sources of fodder.

Cynodon dactylon (L) Pers

Chloria barbata SW.

Chrysopogon fulvus (Spreng.) Chior

Dactylotenium acgyptium (L) P. Beaur.

Dicanthium annulatum (For ssk.)

Heteropogon Contortus (L) P. Beaur.

Iseilema laxum Hack.

Panicum repens L.

Bothriochloa pertuse (L) A. A. Camus

Brachiaria ramosa (L) stapf

The following improved fodder grasses are under cultivation :-

Cenchrus Ciliaris L.

C. setigerus Val (Kozhukattai pullu)

Chloris gayana Krnth ex.stapf. (Rhodes grass)

Panicum antidotale Retz. (Blue panic)

Pennisetum americanum x *P. purpureum* (NB 21) (Napier bajra)

Panicum maximum Jacq. (Gunica grass)

Panicum maximum x *Pennisetum purpureum* (COL - 1)

Endangered Species

There are two endangered species found in this district.

1. Lindernia minima (Benth.) Mukerjee

This species is restricted only to two localities in Tamil Nadu - *viz.* Chengalpattu-MGR district and Nellai-Kattabomman district. In Chengalpattu-MGR district this species has been recorded only from Vandalur Zoological park and also in the neighbouring Guindy National Park in Madras district.

2. Murdannia Lanceolata (Wight) Kammathy

This species occurs in paddy fields around Oragadum near Padappai. This has been already reported as endangered in the Red Data Book of Indian Plants (1987).

Unless the habitats of these plants are conserved they are likely to become extinct.

Rare and threatened species

The flora of this district contain many rare and threatend species. They are :-

Ammannia Octandra L.F.

Amorphophallus sylveticus (Roxb.) Kunth.

Cymbopogon travancorensis Bor.

Cleome felina L.F.

Dipcadi montanum (Dalz.) Baker Var. *madrasi cum* (Barnes & C. Fischer) Deb & Dasgupta

Drosera burmannii Vatil

D. indica L.

Habenaria viridiflora (Rottler ex. Sw.) R. Br.

Indigofera Oblongifolia For sskal

Strychnos lenticellata Hill.

Medicinal plants

Scrub jungles of this district harbour many medicinal plants. The Siddha system of medicine which evolved in Tamil Nadu uses a number of plants of this district for medicinal preparations. Local herbalists also depend on these jungles for their medicinal herbs. The important medicinal plants include : *Aristolochia indica* L. *Corollace pus epigacous* (Rotti. & Willd.) Clarke, *Curcutigo Orchioidas* Gaerta. *Cynodon dactylon* (L.) Pers., *Brosera burmannii* Vahl, *Gymnems Sylyestre* (Retz.) R.Br. ex. Raem. & Schult., *Hybanthus ennes spermus* (L.) Muell., *Mucuna pruriens* (L.) DC. *Ormocarpum Cochin Chinense* (Lour.) Merr. *Rauvolfin tetraphylla* L. and *Strychnos Renti Cellate Hill.*

This unique dry evergreen vegetation which occurs only along the east coast is fast disappearing. The Chengalpattu-MGR district is one of the very few places where this vegetations is still preserved. It is an urgent necessity that this vegetation with many endangered, rare, endemic and medicinal species must be protected from further degradation by suitable conservation measures.

6. Major cultivated and economically important species with local names

(Respective families are indicated in parenthesis)

1. Cereals :-

Eleusine coracana (L.) Gaertn.(Poaceae)-Kaezh varagu.

Oryza sativa L.(Poaceae)-Nellu.

Pennisetum americanum (L.) Leeke (Poaceae) - Kambu

Setaria italica (L.) P. Beauv. (Poaceae) - Thinai

Sorghum bicolor (L.) Moench. (Poaceae) - Cholam

Zea mays L. (Poaceae) - Makka Cholam.

2. Pulses :-

Cajanus cajan (L.) Millsp. (Fabaceae) - Thuvarai

Macrotyloma uniflorum (Lam.) Verde. (Fabaceae) - Kollu

Vigna mungo (L.) Hepper (Fabaceae) - Vulundu

V. radiata (L.) Wilckzeck (Fabaceae) - Pachai payaru, paasi paruppu.

V.unguiculata (L.) Welp. ssp. cylindrica (L.) Eselt. (Fabaceae) - Karamani, Thattai payaru

3. Oil seeds :-

Arachis hypogaea (L.) (Fabaceae) - Manila kottai, Nilakadalai, Vaer kadalai

Sesamum indicum L. (Pedaliaceae) - Yellu

Helianthus annus L. (Asteraceae) - Sooriya kanthi / annus)

4. Vegetable & greens : -

Abelmoschus esculentus (L) Monech (Malvacea) - Vendai

Amaranthus tricolor - (Amaranthaceae) Thottokkeerai Mulaikeerai

Basella alba L. (Basellaceae) - Pasalai

Coccinia grandis (L.) J.Voigt (Cucurbitaceae) - Kovai

Colocasis esculenta (L.) Schott (Araceae)-Seppan kilargee.

Cucurbita maxima Duchesne ex Lam. (Cucurbitaceae) - Parangi Kaai.

C.Moschata (Duchesne ex Lam.) Duchesne ex Poir. (Curcubitaceae) - Poosani.

Cyamopsis tetragonaloba (L.) Taub. (Fabaceae)- Kothavarai

Hibiscus cannebinus L.(Malvaceae) - Kaasili Keerai

H.sabdariffa L.(Malvaceae) Pulicha keerai

Lablab purpureus (L) Sweet (Fabaceae) Avarai

Legenaria Siceraria (Mothina) stardley (Cucurbitaceal) - Suras

Luffa acutangula (L.) Roxb (Cucur bitaceae) - Suras

Momordica charantia L. (Cucurbitaceae) - Paagal

Moringa ptervgosperma Gaertn. (Moringaceae) - Murangai

Musa Paradisiaca L. (Musaceae) - Vaazhai

Raphanus sativus L. (Cruciferae) - Mullangi

Solanum melongena L. (Solanaceae) - Kathiri

Talinum portulacifolium (Forssk.) Asch. (Portulacaceae).
Ceylon pasalai

Trichosanthes cucumerina L. (Cucurbitaceae) - Pudal

5. Flowers :-

Chrysanthemum indicum L. (Asteraceae) - Saamandhi

Crossandra infundibuliformis (L.)Nees(Acanthaceae) -
Kanakambaram

Jasminum sambac (L.) Ait, (Oleaceae) - Malligai

Polianthes tuberosa L. (Agavaceae) Sampangi

Rosa sp. (Rosaceae) - Roja

Togetes patula L. (Asteraceae) - Thulukka saamandhi

Spices & Condiments :-

Capsicum annum L. (Solanaceae) - Milagai

C. frutescens L. (Solanaceae) - Milagai

Coriandrum sativum L. (Apiaceae) - Kothamalli

Tamarindus indica L. (Caesalpiniaceae) - Puli

Plantation crops :-

Anacardium occidentale L. (Anacardiaceae) - Mundhiri

Casuarina littorea L. (Casuarinaceae) - Savukku

Eucalyptus spp. (tereticornis - Smith) - Thyla maram,

Manihot esculenta Crantz (Euphorbiaceae) - Maravalli

Pterocarpus santalinus L. (Fabacene) - Semmaram

Plants used in cottage industries

Aeschynomene aspera L. (Fabaceae) - Sadai
Pith used for packing, making toys, etc.

Cyperus pangorei Rotib (Cyproceae) Paikortai
cuems used for making mats.

Typha angustata Bory & Chaub. (Typhaceae) - Jambu
Leaves used for making mats.

FAUNA

The Amphibians and Reptiles of Chengalpattu-MGR District

The herpotofauna (amphibia and reptiles) of the district comprises of 10 species of frogs and toads, two species of turtles, 11 species of lizards and 15 species of snakes[36]. Almost all the representatives of the forms found commonly throughout the State of Tamil Nadu are found in this district.

Frogs and Toads : Of the species of amphibians, mention should be made of the commonest water frog *(Rana cyanophlyctis)*, paddy-field frog *(Rana limnocharis)* Green frog *(Rana hexadactyla)* and the Indian Bull frog *(Rana tigerian)*. The commonest toad is *Bufo melanostictus*. Of the narrow-mouthed frogs, the Ornate frog *(Microhyla ornata)* and the Ballon Frog *(Uperodon systoma)* are common. The tree frog *(Polypedatos maculatus)* is also seen frequently inside the garden and orchards. Turtles - The Madras Pond Tortoise *(Melanochelys trijuga trijuga)* and the Peninsula Flapsholl turtle *(Lissemys punctata)* are the representatives of freshwater turtle fauna of the district.

Lizards : Some eleven species constitute the lizard fauna. Three kinds of geckos namely, the Indian spotted House-gecko *(Homidactylus Brooki)*, the Smooth gecko *(Hemidactylus frenatux)*, and the Bark gecko *(Hemidactylus leschenaulti)* are found in the vicinity of human dwelling. The last mentioned gecko is, however, mainly a tree dweller. In addition, the Large Spotted gecko *(Hemidactylus maculatus)* is met with, in the cultivated areas. The common garden lizard *(Calotes versicolor)* is found in plenty throughout the district, but the Bearded lizard *(Sitanaponticeriana)* is generally met with, in dry, open country. The Rock lizard *(Psammophilus dorsalis)*, as its name suggests, is a rock-dweller and is found only in the low hilly areas. The grotesque and changeable tree lizard-*Chameleo zeylanicus* is found in the scrub jungles of the district. The secretive skinks are represented by the Common Skink *(Mabuya carinata)* and the Dotted garden skink *(Riepa punctata)*. The largest lizard found is the common monitor *(Varanus bengalensis)*.

Snakes : Of the species of snakes, the majority are harmless. The common blind snake *(Ramphotyphlops)* is a worm-like secretive snake that can be seen during rains. Both the boas, the common sand boa *(Eryx conicus)* and the John's sand boa *(Eryx johni)* are commonly seen in the rice fields and other cultivated areas. The largest colubrid snake is the Rat snake *(Ptyas mucosus)*. Two tree snakes namely, the Green whip snake *(Ahaetulla nasuta)*, and the Bronzeback tree snake *(Dendrelaphis trishis)* are common. The Wolf snake *(Lycodon aulicus)* is a night-active, harmless species, which resembles the deadly krait. The Buff stripped keelback *(Amphiesma stolata)* and the Checkred Keelback *(Xenocrophis piscaton)*

are the commonest water snakes. The Dog-faced water snake *(Cerberus rhynchops)* inhabits the estuaries. All the four main venomous snakes of India, *viz.*, the Cobra *(Naja naja naja)*, the common Krait *(Bungarus caeruleus)*, the Russell's viper *(Vipera russelli)* and the Saw-scaled viper *(Echis carinatus)* are found in the district.

Aves (Birds)[37]

The following birds frequent Madras and Chengalpattu districts :

Family	Species
Fregatidae	1. *Fregata minor* (Great Frigata bird)
Policanidae	2. *Pelecanus Philippensis* (Grey Pelican)
Phalacro corcidas	3. *Phalacro corax niger* (Little Cormorant)
Anhingidas	4. *Anhinga rufa* (Darter)
Ardeidas	5. *Ardes cineres* (Grey Heron)
	6. *Ardeola cravii* (Pond Heron)
	7. *Buhuloulus ibis* (Cattle Egret)
	8. *Ardes alba* (Large Egret)
	9. *Egretta Enter Modiats* (Median Egret)
	10. *Egretts garzetta* (Little Egret)
	11. *Egretts qualaris* (Roof Heron)
Threskiomithidas	12. *Platales leucorodia* (White Ibis)
Phoenicopterides	13. *Phoenicopeterusroseus* (Greater Flamingo)
Anatides	14. *Anas platyrhynches* (Spotbill Duck)
Accipitrides	15. *Milvus micrans* (Parish Kite)
	16. *Haliaster indus* (Brahmini kite)

Family	*Species*
	17. *Heliecetusleucorypsus* (Pallas Fish Eagle)
	18. *Circactus callicus* (Short-toad Eagle)
	19. *Pandian helisetus* (Osprey)
Falconidas	20. *Falco tinnunculus* (Kestrel)
Phasianidas	21. *Francolinus pondicerianus* (Grey Patridge)
Dromadidas	22. *Dromas ardeola* (Crab Plover)
Macumtopidas	23. *Haemstopus ostralegus* (Oystercatther)
Recurvirostridas	24. *Himantopus himantopus* (Black winged stilt)
	25. *Recurvirostrs avesetta* (Avoeet)
Glareolidas	26. *Glareols lactes* (Small Indian Prstincols)
Charadridas	27. *Vanellus indicus* (Red-wattled Lapwing)
	28. *Vanellus malabaricus* (Yellow-wattled Lapwing)
	29. *Pluvialis squatarola* (Grey Plover)
	30. *P.domenica* (Eastern Colden Plover)
	31. *Charadrius leschenaulti* (Large sand plover)
	32. *C.dubius* (Little Ringed Plover)
	33. *C.monogolus* (Lesser sand Plover)
Soolopacides	34. *Limoss limosa* (Black-tailed Godwit)
	35. *L.laponica* (Bar-tailed Godwit)
	36. *Numenius phaeopus* (Whimbrel)
	37. *N.arqusta* (Curlow)

Family	Species
	38. *Tringa erythropus* (Spotted Redshank)
	39. *T. totanus* (Common Redshank)
	40. *T.stanenatilis* (Marsh sandpiper)
	41. *T.nebularia* (Green shank)
	42. *T.ochropus*
	43. *terek*
	44. *T.hypoleucos* (Common mandpiper)
	45. *Aremaria interpres* (Turnstone)
	46. *Calidris minutus* (Little stint)
	47. *Calidris (alpinust)* (Dunlin)
	48. *Calidris testaceus* (Curlow Sandpiper)
	49. *Philomachus puonas* (Ruff and Reevs)
Larides	50. *Larus brunicephalus* (Brown-headed Gull)
	51. *L.ridibundus* (Blackheaded Gull)
	52. *Chiidonias hybrida* (Whiskered tern)
	53. *Gelochelidon niloties* (Gull billed Tern)
	54. *Hydroprogne caspisa* (Casspian Tern)
	55. *Sterns hirunds* (Common Tern)
	56. *Sterna albifrons* (Little Tern)
	57. *Sterna (Gurantist)* (Indian River Tern)
	58. *Columba livia* (Blue Rock Digeon)
	59. *Streptopelia chinensis* (Spotted Dove)

Family	*Species*
Psittecides	60. *Pstittacula Krameri* (Rose ringed Parakeet)
Cuculidas	61. *Cuculus varius* (Brain fever Bird)
	62. *Eudynamys colopaces* (Koel)
	63. *Centropus sinensis* (Crow-Phesant)
Strigides	64. *Athene brama* (Spotted Owlet)
Apodidas	65. *Cypsiurus pervus* (Palam Swift)
	66. *Apus offines* (House Swift)
Alcidinides	67. *Ceryle rudis* (Lesser Pied Kingfisher)
	68. *Aleeds athis* (Common Kingfisher)
	69. *Halcyon omyrnensis* (White kreasted Kingfisher)
Neropides	70. *Mercos philippious* (Alue-tailed Hes-enter)
	71. *M. Greentalis* (Green Boe-eater)
Coracidas	72. *Corecing bengalcusis* (Indian Roller)
Upupides	73. *Upups opops* (Hocpoe)
Capitenidse	74. *Hegalaima hacmacephala* (Coppersmith)
Pieidse	75. *Dinopium bengalense* (Golden backed woodpacker)
Alsudidas	76. *Mirafra cryhropters* (Redwinged Bush lark)
	77. *Erymopterix crises* (Ashy-crowned Finch Lark)
Mirundinidse	78. *Mirundo rustico* (Common swallow)
Dicruridse	79. *Dicmirus adsimilis* (Black Drongo)
Artemidse	80. *Artamus fuscus* (Ashy Swallow-shrike)

Family	Species
Sturnidse	81. *Sturnus pagadorum* (Brahminy Myna)
	82. *Acridotherus tristis* (Common Myna)
Corvidse	83. *Pendrecitta vacabunda* (Indian Tree-pie)
	84. *Corvus splendens* (House Crow)
	85. *C.macrorhyncose* (Jungle Crow)
Irenidse	86. *Aegithina tiphia* (Common Iora)
Pyomotidse	87. *Pycnonotus cafer* (Red vented Bulbul)
Timeilidse	88. *Turdoides affinis* (White headed Babbler)
Sylvidse	89. *Orthotomus sutorius* (Tailer Bird)
	90. *Acrocephalus dumetorum* (Rlyth's Reed Warhler)
	91. *Sylvia curruca* (Lesser White-throat)
	92. *Phylioscopus magnirostris* (Large billed Leaf Warhler)
	93. *P. trochiloides* (Dull Green Leaf Warhler)
Thrdides	94. *Copsychus saularis* (Magpie-Robin)
Motacillides	95. *Motacilla falva* (Yellow wagtail)
	96. *M.Caspica* (Gray Wagtail)
	97. *M.alba* (White Wagtail)
	98. *M.maderaspattensis* (Large pied Wagtail)
Bececides	99. *Dicaeum agile* (Thick-hilled Floverpacker)
	100. *R.crythrothynches* (Tickell's Floverpecker)
Mectarimiides	101. *Mectarinia zeylonica* (Purple-rumped Sunbird)

Varieties of birds at Vedanthangal Sanctuary

Family	Species
	102. *Noctarenia astatics* (Purple sunbird)
Passeridan	103. *Passer domesticus* (House Sparrow)

A list of water-birds, raptors, ground-birds, waders and treetop and bush birds seen at the Vedantangal tank, its bund and the periphery

The distance from place to place is no handicap to birds blessed with the power of flight, and occasionally a bird may be seen in a quite typical setting. This list of 115 birds seen at Vedantangal and surroundings is neither based solely on sight-records irrespective of common occurrence, nor on the basis of its being typical of the Vedantangal avifauna, though most of the birds listed do belong to that setting. For instance, the peregrine falcon is included though rare here, because it is notable and given to preying on migratory ducks and indigenous egrets. Some birds seen but not definitely identified as belonging to one of two closely similar species (like the pintail and fantail snipes) have been left out-many birds of the teeming subfamily of warblers and waders may have been left out. This list is meant for the interest bird-watcher; to the less expert of them it may be helpful, and the more expert can have the pleasure of adding to it. The list follows the order currently in use in the ornithological books in listing the birds. Migratory birds have been marked with the mark, 'M' after their scientific name, passage migrants with 'P.M.', and indigenous birds (though they may not breed at Vedantangal) with 'I'[38].

1. Little Grebe-Podiceps fuficollis capensis; I-On the water.
2. Grey (or Spottedbilled) Pelican-Pelecanus phillippensis Phillippensis; I-Sojourner.
3. Large Cormorant-Phalacrocorax fuscicollis; I-Breeding here.
4. Indian Shag - Phalacrocorax fuscicollis; I-Breeding here.
5. Little Cormorant - Phalacrocorax niger; I-Breeding here.
6. Indian Darter - Anhinga rufa melanogaster; I-Breeding here.
7. Eastern Grey Heron - Ardea cinerea rectirostris; I-Breeding here.
8. Indian Pond Heron (or Paddy bird) - Ardeola grayii; I-Common in the peripheral ice fields, Breeds here.
9. Cattle Egret - Bubulcus ibis; I-Common all around Breeds here.
10. Large Egret - Egretta alba modesta; I-Breeds here.
11. Median (or Smaller) Egret - Egretta intermedia; I-Breeds here.
12. Little Egret - Egretta garzetta; : I-Breeds here.
13. Night Heron - Nycticorax nycticorax; I-Breeds here.

14. Openbilled Stork - Anastomus oscitans; I-Breeds here.
15. White Ibis - Threskiornis malanocephala; I-Breeds here.
16. Black Ibis - Pseudibis popilosa; I-Occasional visitor.
17. Spoonbill - Platalea leucorodia; I-Breeds here.
18. Lesser Whistling Teal - Dendrocygna jevancca; I-Visitor to the tank, gregarious. Does not breed here.
19. Pintail - Anas acuta; M-Visitor to the home water.
20. Common Teal - Anas crecca; M-Visitor to the home water.
21. Spotbill - Anas poecilorhyncha; I-Visitor to the home water.
22. Wigeon - Anas penelope; M-Visitor to the home water, Not common.
23. Gargancy - Anas querquedula; M-Visitor to the home water.
24. Shoveller - Anas clypeota; M-Not common.
25. Blackwinged Kite - Elanus ceruleus; I-In the peripheral scrub.
26. Pariah Kite - Milvus migrans govinda I.
27. Brahiminy Kite - Haliastur indus; I.
28. Shikra - Accipter bodius; I-In the treetops or in flight.
29. Lesser White Scavenger Vulture - Neophron perenopterus ginginianus: I-Occasional visitor.
30. Pale Harrier-Circus macrourus; M-Peripheral fields and scrub.
31. Montagu's Harrier-Circus pygargus: M.
32. Marsh Harrier-Circus aeruginosus: M.
33. Short-toed Eagle-Circaetus gallicus-Predator seen occasionally.
34. Peregrine Falcon-Falco peregrinus: M-Uncommon predator.
35. Kestrel-Falco tinnunculus: I-Peripheral scrub.
36. Grey Parttidge-Francolinus pondicerianus: I-Peripheral scrub.
37. White-breasted Waterhen-Amauronis phoenicuras: I-Cane brakes-behind bund.
38. Indian Moorhen-Gallinual chloropus Indian: I-Common on the tank.
39. Common Coot-Fulica atra-Occasionally seen on the home-water.
40. Redwattled Lapwing-Vanellus indicus: I-Margins of tank when drying up, peripheral areas.
41. Yellow-wattled Lapwing-Vanellus malabaricus: I-Periphery.
42. Eastern Golden Plover-Pluvialis dominica: M-Margins of tank.
43. Little Ringed Plover-Charadrius dubius: M-Tank's periphery.
44. Common Redshank-Tringa totanus: M-Margin of tank.
45. Greenshank - Tringa nebularia: M-Margin of tank.

46. Common Sandpiper-Tringa hypoleucos: M-Margin of tank.
47. Snipe-Genus Çapella: M-Undetermined, probably fantailed snipe.
48. Little Stint-Calidris minutus: M-Margin of tank gregarious.
49. Stone Plover-Burhinus oedicnemus: I-Surrounding dry scrub.
50. Indian Courser-Cursorius coromandelicus: I-Surrounding dry scrub.
51. Brownheaded Gull-Larus b runnicephalus: M-In eclipee plumage, uncommon.
52. Whiskered Tern-Chlidonias hybrida: M-Over the water.
53. Gullbilled Tern-Gelochelidon nilotica: M-Over the water.
54. Blue Rock Pigeon-Columba livia: I-Periphery, perhaps feral atavistic stock.
55. Indian Ring Dove-Streptopelia decaocto: I-Occasionally seen.
56. Spotted Dove-Streptopelia chinensis: I-Occasionally seen.
57. Little Brown Dove-Streptopelia senegalensis: I-Occasionally seen.
58. Roseringed Parakeet-Psittacula krameri: I-Intrees.
59. Redwinged Crested Cuckoo-Clamator coromandus: I.P.M. - On the trees on the bund.
60. Pied Crested Cuckoo-Clamator jacobinus: I.P.M. - On the trees on the bund.
61. Indian Plantive Cuckoo-Cacomantis merulnus: I.P.M. - On the trees on the bund.
62. Common Hawk-Cuckoo (or Brainfever-bird) - Cuculus varius: I.P.M.
63. Koel-Eudynamys scolopaces: I-More or less local, Bund.
64. Small Greenbilled Malkoha-Rhopodytes Viridirostris: I-Bund, Rare.
65. Crow Pheasant (or Coucal) - Centropus sinensis: I-Local.
66. Spotted Owlet-Athene Brama: I-Peripheral trees.
67. Common Indian Nightjar - Caprimulgus asiaticus: I-Pheripheral earth-roads after nighfall, and peripheral dry fields.
68. Palm Swift-Cypsiurus parvus: I-On Palm Yrahs on bund.
69. Lesser Pied Kingfisher-Ceryle rudis: I-On rocks around tank, over the water.
70. Common Kingfisher-Alcedo atthis: I-On rocks around tank over the water.
71. White breasted Kingfisher-Halcyon smyrnonsis: Around tank, over the water and on trees.
72. Bluetailed Bee-eater-Merops phillippinus: I-Around tank in the scrub.
73. Green Bee-eater-Merops orientalis: I-Around tank in the scrub.

74. Indian Roller (or Blue jay)-Coracias benghalensis: I-Treetops on palmyrahs.
75. Hoopoo-Upupa epops: I-Peripheral scrub.
76. Crimsonbreasted Barbet (or Coppersmith)-Megalaima haemacephala: I-Treetops.
77. Leser Goldenbacked Woodpecker-Dinopium benghalense puncticolle-Trees on and around bund.
78. Indian Pitta-Pitta brachyura: I.P.M. Bushes around.
79. Redwinged Bush Lark - Mirafra erythoptera: I-Surrounding scrub.
80. Ashycrowned Finch-Lark-Eremopterix grisea: I-Surrounding scrub.
81. Common Swallow-Hirundo rustica: M-Over the water.
82. Striated (Redrumpted) Swallow-Hirundo dourica: M-Over the water.
83. Grey Shrike-Lanius excubitor-Peripheral dry scrub.
84. Baybacked Shrike-Lanius vittatis-peripheral dry scrub.
85. Golden Oriole-Oriolus kundoo: I-Tree tops.
86. Black Drongo (or King-crow)-Dicrurus adsimilis: I-Peripheral scrub.
87. Ashy Swallow-Shrike-Artamus fuscus: I-Around bund.
88. Brahminy Myna-Sturnus pagodarum: I-Peripheral areas, bund.
89. Common Myna-Acridotheres trists: I-Peripheral areas Bund.
90. Indian Tree Pie-Dendrocitta vagabunda: I-Bund, not common.
91. House Crow-Corvus splendens: I-Ubiquitous.
92. Jungle Crow-Corvus macrorhynchos - Surroundings.
93. Common Wood Shrike - Tephrodornis pondicerianus: I-Treetops.
94. Blackheaded Cuckoo-Shrike-Coracina melanoptera: I-Treetops.
95. Small Minivet-Pericrocotus cinnamomeus: I-Treetops Uncommon.
96. Common Iora-Aegithina tiphia: I-Trees and bushes.
97. Redvented Bulbul-Pycnonetus cafer: I-Peripheral and bushes.
98. Whitebrowed Bulbul-Pycnonotus luteolus: I-Peripheral bushes.
99. Whiteheaded Babbler-Turdoides affnks: I-Typically south Indian.
100. Paradise Flycatcher-Terpsisphone paradisi: I-Bund.
101. Blyth's Reed Warbler-Acrocephalus dumetorum: M-Peripheral vegetation.
102. Tailor Bird-Orthotomus sutorius: I-bushes around.
103. Magpie Robin-Copsychus saularis: I-Bushes around.
104. Pied Bush Chat-Saxicola fulicata: I-Peripheral scrub.
105. Indian Robin-Saxicolodes fulicata: I-Peripheral scrub.

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106. Paddyfield Pipit-Anthus novaeseelandiae: M-Identity not certain.
107. Grey Wagtail-Motacilla caspica: M-Waterside, ground.
108. Large Pied Wagtail-Motacilla madoraspatensis: I-Waterside, ground.
109. Purplerumped Sunbird-Nectarinia zeylonica: I-Peripheral vegetaion.
110. Leten's Sunbird-Nectarinia lotenia: I-Typical of hindustanica South India.
111. Purple Sunbird-Nectarinia asiatica: I-Peripheral bushes.
112. House Sparrow-Passer domesticus indicus: I-Ubiquitous.
113. Baya Weaver Bird-Ploceus philippinus: I-Pheripheral scrub.
114. Spotted Munia-Lonchura punctulata: I-Peripheral scrub.
115. Blackheaded Munia-Lonchura malacca: I-Peripheral scrub.

Mammals

The following major land mammals[39] known from the district :

1. Bonnet Macaque, *Macaca radiata* (Geoffrey)
2. Slender Loris, *Loris tardigradus* (Linne)?
3. Indian grey mangoose, *Herpestes edwardst* (Geoffroy)
4. Jackal, *Canis aureus* Linne
5. Ratel or Honey badger, Mellivora capensis (Schreber)
6. Indian flying fox, *Pteropus giganteus* (Brunnich)
7. Fulvous fruit bat, *Rousettus loschenauti* (Desmarest)?
8. Short nosed fruit bat, *cynopterus sphinx* (Vahi)
9. Indian pipistrele, *Pipistrellus coromandra* (Gray)
10. Common yellow bat, *Scotophilus heathi* (Horsfield)
11. Indian palm squirrel, *Funambulus palmarum* (Linne)
12. Jungle striped squirrel, *F.tristratus* (Waterhouse)?
13. Indian gerbille, *Tatera indica* (Hardwicke)
14. Indian Mole rat, *Bandicota bengalensts* (Gray & Hardwicke)
15. Bandicoot rat, *B.indica* (Bechstein)
16. Indian houserat, *Rattus rattus* (Linne)
17. Brown rat, *R. noivegicus* (Berkenhout)
18. Indian Mole rat, *Mus booduga* (Gray)
19. House mouse, *Mus musculus* (Linne)
20. Long tailed tree mouse, Vandeleuria oleracea (Bonnett)
21. Indian Porcupine, *Hytrix indica* Kerr.
22. Indian hare, *Lepus nigricollis*, F. cuvier.
23. Sambar, *Cervous uniclor* Kerr.

24. Chital or spotted deer, *Axis axis* (Erxleben)
25. Black buck, *Antilope cervicapra* (Linne)
26. Pig, *Sus scrofa* (Linne)

The fresh and brackish water fishes of the district

The Ichthyofauna of the district reported till date comprises 170 species (including four exotic species) belonging to 57 families and 13 orders. This includes species reported/identified from the major freshwater bodies, *viz.,* Chembarambakkam, Red Hills, Adayar, Palar and Cooum rivers and from areas, *viz.,* Ponneri, Minjoor, Pallavaram, Pallikarni, Pattaikarappakkam, Vandalur, Vedanthangal, etc. The major estuarine fishes reported here have been identified from Pulicat lake, month of Buckingham canal and Ennore estuary. The primary freshwater fishes are represented maximally by the family Cyprinidae (carpa) of which 21 species are listed here. The brackish water fauna constitute the Perches, Glassfishes, Groupers, Pony fishes, Sillagos, Snappers, Silver-biddies, Breams, Croakers, Goatfishes, Sicklefishes, Leaf fishes, Mullets, Rabbit fishes, Dragonets, Gobies, Pike Congers, Herring, Sardines, Shads, Ilishas, Pellonas, Anchevies, Half beaks, Garfishes, Silversides, Pipe fishes, Flatheads, Soles, Tripod fishes, Puffer fishes, Sea catfishes, eoltail cat fishes etc. Representatives of a wide range of habitats from marshy to freshwater bodies are the Murrels, Spinyeels, Bagrid catfishes, Airbreathing catfishes, Medakas or Rice fishes[40].

Live bearers and the Cichlids. The species are listed following Nelson (1976); the English and Tamil common names and the ecology of most of the species are provided[41].

GRADE : PISCES

CLASS : OSTEICHTHYS

SUBCLASS : ACTINOPTERYGII

SUBDIVISION : TELEOSTEI

I ORDER : OSTEOGLOSSIFORMES

SUBORDER : NOTOPTEROIDEI

1. FAMILY : NOTOPTERIDAE (Featherbacks)

1. *Notopterus notopterus* (Pallas) - Featherback

Tamil : *Ambattan kathi, Chotta valai, Chappathi, Ambattan valai.* Inhabits fresh and brackish waters; attains a length of 61 cm; carnivorous, hence can be cultivated only with large fish; breeds in stagnant or running water in the rainy season.

II ORDER : ELOPIFORMES

SUBORDER : ELOPOIDEI

2. FAMILY : ELOPIDAE [Lady fishes (Ten pounders)]

2. *Elops machnata* (Forsskal) - Ladyfish.

Tamil : *Ullathi, Alathi.*

In coastal waters, enters lagoons and estuaries; fresh is rather insipid and full of bones; important in pond culture in Hawaii where the fry is trapped on the incoming tide; attains a considerable length.

3. FAMILY : MEGALOPIDAE (Tarpons)

3. *Megalops cyprinoides* (Broussonet) - Oxey tarpon, Indo-Pacific Tarpon.

Tamil : *Moran Kendai, Marua, Mirakkai, Mullukendai.*

A coastal pelagic species, entering lagoons, estuaries and fresh water, sometimes upstream at a distance of 400 km. from the sea; attains a length of 40 cm. it is occasionally captured in rivers, but much more commonly found in tanks.

4. FAMILY : ALBULIDAE (Bonefishes)

4. *Albula neoquinaica* Valenciennes - Roundjaw bonefish Inhabits shallow coastal waters over sandy areas or mangrove swampa; attains a length of 60 cm.

III ORDER : ANGUILLIFORMES (Eels)

5. FAMILY : ANGUILLIDAE (Catadromous eels)

5. *Anguilla bengalensis bengalensia* (Gray) - Indian long finned eel.

Tamil : *Pori-velangu, Serampambu, Vellangoo.*

Inhabits freshwaters, although it occurs in estuaries and in the sea during early life and near maturity; of considerable commercial value; there is a good export market for both live elvers as well as eels; attains a length of 120 cm.

6. *Anguilla bicolor bicolor* McClelland - Level finned eel.

Tamil : *Velangoo.*

Inhabits lowland freshwaters, occurs in estuaries and in the sea during early life and near maturity; attain 100 cm.

6. FAMILY : MURAENESOCIDAE (Pike Congers).

7. *Mureenesox Dagic* (Hamilton-Buchanan) - Common pike conger. Brackish and salt waters of lagoons and shallow coastal inlets; grows to 5-7 feet.

IV ORDER : CLUPEIFORMES

7. FAMILY : CHIROCENTRIDAE (Wolf-herrings)

8. *Chirocentrus dorab* (Forsskal) - Dorab wolf-herring

Tamil : *Valai, Thuppu valai, Mullu-valai.*

Coastal, contributes, to an important fishery; found in Ennore estuary; good eating, but bony, large specimens dangerous.

8. FAMILY : GLUPEIDAE (Herrings, Sardines, Shads)

SUBFAMILY : SPARTELLOIDINAE

9. *Spartelloides gracilis* (Schlegèl) - White bait.

It is reported that the tuna follow shoals in the Laccadive sea and feed voraciously on them in certain seasons especially during the south-west monsoon; seen in Ennore estuary.

10. *Herklotsichthys quadrimaculatus* (Ruppell) - Sluestripe herring.

Widespread in the tropical Indo-west Pacific; enters estuaries.

11. *Hilsa (Hilsa) Kelee* Cuvier - Kelee shad.

Tamil : *Koli-meen.*

Marine, Pelagic, but entering estuaries and able to tolerate quite low salinities; attains a length of 24.5 cm.

SUBFAMILY : DOROSOMATINAE (Gizzard shads)

12. *Anodontostome chacunda* (Hamilton) - Chacunda gizzard.

Tamil : *Muddu-candai, Koi meen.*

Marine, pelagic and inshore and in estuaries; attains a length of 17 cm.

13. *Nematalosa nasus* (Bloch) - Bloch's gizzard shad.

Tamil : *Mudducandai, Koi meen.*

Marine, entering estuaries and probably also rivers; attains a length of 15 cm.

9. FAMILY : PRISTIGASTERIDAE (Ilishas, Pellonas)

14. *Ilisha melastoma* (Schneider) - Indian ilisha.

Marine, entering estuaries; attains a length of 17 cm.

15. *Opisthopterus tardoory* (Cuvier) - Tardoora

Tamil : *Poovalai, Thota.*

Marine, close to the shore, entering estuaries; attains a length of 18 cm; the fat content is low, but rich in calcium and is suitable for use as fish meal or fertilizer.

10. FAMILY : ENGRAULIDIDIDAE (Anchovies)

16. *Stolephorus and hraensis* Babu Rao - Andhra anchovy.

Tamil : *Netholi, Nethali.*

Coastal, entering estuaries; taken commercially only occasionally.

17. *Thryssa hamiltonii* (Gray) - Hamilton's thryssa.

Tamil : *Nedumporuva*

Marine, pelagic and inshore, enters estuaries.

18. *Thryssa kammalensoides* Wongratana - Godavari thryssa.

Tamil : *Aathuporuva*

Inhabits estuaries; attains a length of about 11 cm SL.

19. *Thryssa mystex* (Schneider) - Moustaced thryssa.

Tamil : *Poruva*

Attains an average length of 21 cm.

20. *Thryssa purava* (Hamilton-Buchanan) - Gangetic anchovy.

Tamil : *Nethal, Ven Kannu*

Marine, pelagic, mostly in shore and entering estuaries and brackish waters, attains a length of 15.5 cm.

V ORDER : CYPRINIFORMES

11. FAMILY : CYPRINIDAE (Carps Barba & Minnows)

SUBFAMILY : CULTRINAE (Chilwas)

21. *Chela cachius* (Hamilton-Buchanan)-Chela.

Inhabits flowing waters in plains and submontane regions, grows to six cm. breeds freely in ponds, tanks and small streams; due to their easy availability and wide distribution they are used as a larvicidal fish.

22. *Salmostoma clupeoides* (Bloch)

Tamil : *Neg-teli, Vellichi, Nettalai, Vellachee candee.*

This species attains a length of 15 cm and is a tasty fish; of minor interest to fisheries.

SUBFAMILY : RASBORINAE

23. *Amblypharyngodon microlepis* (Bleeker) - Indian carplet.

Tamil : *Oori.*

This Indian carplet attains a length of 10 cm; of no interest to fisheries; active but peaceful species in the aquarium.

24. *Esomus thermoicos* (Valenciennes) - Flying barb.

Tamil : *Meesai paravai.*

Inhabits ponds, tanks, ditches etc., can tolerate very muddy waters during draughts; attains a length of 12 cm.

25. *Parluciosoma daniconius* (Hamilton-Buchanan)-Common Rasbora.

Tamil : *Ovaree candee, Paravu candee, Patta-kanju.*

Inhabits pools, ditches and streams; attains a length of 10 cm. and is hardy and active.

26. *Rasbora caverii* (jerdon)

A small fish attaining a length of 7 cm; of no interest to fisheries.

SUBFAMILY : CYPRININAE (Barbs)

27. *Catla catla* (Hamilton-Buchanan) - Catla.

Tamil : *Thoppa meen, Japan Kendai, Koora Kendai, Yameneri Kendai, Kanavi.*

This fast growing Indian major carp has been introduced into rivers of Peninsular India, Sri Lanka and China, *Catla* is non predatory, feeding restricted to the surface and mid waters; suitable for polyculture with bottom and column feeding fishes, *viz.*, Rohu and Mrigal; known to grow to over 120 cm; attains maturity at two years and breeds in rivers during monsoons.

28. *Cirrhinus reba* (Hamilton-Buchanan) - Reba carp.

Tamil : *Arijan Kendai, Kull arinjan, Pooreli, Pillarinjan, Velaranjan.*

Inhabits clear rivers and tanks; grows to 30 cm. in natural water, breeds in flood shallows in June-September; cultivated in ponds; a plankton and detritus feeder; induced breeding is successful.

29. *Lebeo calbasu* (Hamilton-Buchanan) - Calbasu

Tamil : *Kakkameen, Karum-sel, Karuppu sel, Sel Kendai.*

Inhabits rivers and ponds, widely distributed major Indian carp; important game fish and food fish, thrives better in tanks and lakes than in running waters; bottom feeder; can tolerate slightly brakish water also; induced bred by hypophysation; attains a length of 90 cm.

30. *Puntius amphibius* (Valenciennes) - Scarlet banded barb.

Tamil : *Kulla kendai, Numbriti Kendai.*

Inhabits streams and ponds in low country; attains a length of 20 cm; known to breed in shallow waters during June-July in Tamil Nadu and October-November. In South Karnataka; a potential larvicide fish.

31. *Puntius arenatus* (Day)

This attains a length of 10 cm. and is a rare species.

32. *Puntius chola* (Hamilton-Buchanan) - Swamp barb, Chola barb.

Tamil : *Putti-kendai, Macha kendai, Vannathi, Pooval kendai, Servali kendai.*

This attains a length of 12 cm; common in the coastal belts of Kerala and Tamil Nadu. In Burma, it is reported to be rich in fat during the breeding season and an oil is extracted from it.

33. *Puntius dorsalis* (Jerdon)

Tamil : *Sale kendai, Palpooran, Kendai, Moorkanam kendai*

Inhabits rivers, streams, ponds and lakes; this species has been proved useful in guinea worm control measures; attains a length of 24 cm; of minor interest to fisheries.

34. *Puntius filamentosus* (Valenciennes) - Filamentedbarb.

Tamil : *Chevalle, Seccali, Macha kendai.*

A popular aquarium fish; breeds in ponds.

35. *Puntius mahecola* (Valenciennes) - Black spot barb.

Tamil : *Macha kendai.*

Attains a length of 15 cm; a popular acquarium fish.

36. *Puntius sarana subnasutus* (Valeociennes) - Olive carp.

Tamil : *Pingella, Panjelai kendai, Pallu kendai, Sani kendai, Potha kendai Kilathi.*

Attains a length of 25 cm; of considerable economic importance.

37. Puntius sharmai Menon and Rema Devi

This small puntid was discovered in the freshwater bodies in Mogappair recently.

38. Puntius sophore (Hamilton-Buchanan) - Stigma barb

Tamil : *Salli kendai, Sarmutti, Kuran chalbi, Kulla kendai, Vella kendai, Chand kendai.*

Inhabits plains and submontane regions; attains a length of 13 cm; this barb is considered to be of medicinal value in Tamil Nadu.

39. Puntius ticto (Hamilton-Buchanan) - Fire fin barb

Tamil : *Wennatte, Pulli kendai.*

Inhabits montane and submontane regions; a popular barb of the acquaria, prized for its irridescense and the red edging on its dorsal fin; attains a length of 10 cm.

40. Puntius vittatus Day

Inhabits freshwater ponds, streams and lakes of the plains; this is one of the smallest barbs, is hardy and a good breeder; suitable in a community tank.

12. FAMILY : COBITIDAE (Loaches)

41. Lepidocephalus thermalis (Valenciennes) - Lesserloach.

Tamil: *Assaree, Assari meen.*

Attains a length of eight cm; of no interest to fisheries but of some value as an acquarium fish.

VI ORDER : SILURIFORMES (Catfishes)

13. FAMILY : BAGRIDAE (Bagridfreshwater catfishes)

42. Mystus cavasius (Hamilton-Buchanan) - Dwarf cat fish.

Tamil : *Vella kellettee, Nai keluthi, Solai keluthi, Cutta, Vazhappu keletee.*

Inhabits freshwater and tidal rivers and lakes; also beels, ponds, ditches and inundated fields; common good fish; attains a length of 40 cm. SL; its pectoral spine causes painful wounds.

43. Mystus gulio (Hamilton-Buchanan) - Long whiskered catfish.

Tamil : *Nai keluthi, Kattai keluthi, Uppang keletee.*

Inhabits estuaries and tidal rivers and lakes, ascending to freshwater, often enters the sea; this gregarious catfish attains a length of 40 cm.

44. *Mystus keletius* (Valenciennes)

Inhabits rivers, tanks and ponds; attains a length of 12.5 cm.

45. *Mystus oculatus* (Valenciennes)

Inhabits freshwaters and estuaries; attains a length of 15 cm.

46. *Mystus vittatus* (Bloch) - Striped dwarf catfish.

Tamil : *Nattu kellettee, Auppan keluthi, Sonan keluthi, Katta keluthi*

Inhabits standing and flowing waters, occurring within the tidal influence also; most common small sized catfish caught in large quantities; attains a length of 21 cm.

14. FAMILY : SILURIDAE (Sheathfish, Fresh water catfishes)

47. *Wallago attu* (Schneider) - Freshwater shark.

Tamil : *Valai, Athu valai.*

Inhabits freshwater and tidal waters, in rivers, tanks, channels, reservoirs etc., largest, voracious and predatory on the local catfishes, distructive to the more valuable food fishes; prefers muddy tanks, abundant during the warm season, premonsoon summer breeder; grows to about two m.; due to its rich oil content it is liked by many; it is also offered to Goddess Kali by the Hindus.

15. FAMILY : SCHILBEIDAE (Schilbeld catfishes)

48. *Psedeutropius atherinoides* (Bloch)

Inhabits freshwaters and tidal rivers; owing to its bright colour and small size it is favoured by aquarists.

49. *Proeutropiichthys taakree taakree* (Sykes)

Attains a length of 20 cm. SL and is of minor interest to fisheries.

16. FAMILY : CLARIIDAE (Ari-breathing catfishes)

50. *Clarias batrachus* (Linnaeus)

Tamil : *Masarai, Karupputheli*

Inhabits fresh and brackish waters of plains, abundant in ponds and rivers, more in swampy and derelict waters, lie concealed in the mud for hours; hardy fish, can live out of water for some time, move short distance over lands as it has an accessory respiratory organ; attains a length of 46 cm; highly esteemed for its nourishing properties and for quick recovery from prolonged illness; employed as a test animal for biological assay for

pituitary hormones; air bladder yields a course isinglass; short spawning period coinciding with the south west monsoon.

17. FAMILY : HETEROPNEUSTIDAE

51. Heteropneustes fossills (Bloch) - Stinging catfish.

Tamil : *Thay-lee, Theli meen.*

Inhabits freshwaters, rarely brackish waters; of high economic importance; able to tolerate slightly brackish water; air breathing apparatus enables it to exist almost in any kind of water; lives in large sholas and extensively fished on account of the reported invigorating qualities of its flesh; induced spawning is successful; attains a length of 30 cm; this fish is much dreaded because of its aggressive behaviour and can inflict painful wound with its pectoral spines.

18. FAMILY : ARIIDAE (Marine catfishes)

52. Arius arius (Hamilton-Buchanan) - Hamilton's catfish.

Inhabits seas, estuaries, tidal rivers and brackish water lakes, common in estuaries; attains a length of 20 cm.

53. Arius caelatus Valenciennes - Engraved catfish.

Tamil : *Keleru.*

Primarily marine, but enters brackish waters and tidal rivers; attains a length of 30 cm.

54. Arius maculatus (Thunberg) - spotted catfish.

Tamil : *Uppu kali kelithi*

Commercially important in the west coast of India.

19. FAMILY : PLOTOSIDAE (Catfish eels)

55. Plotosus caninus Hamilton-Buchanan-Canine catfish eel.

Tamil : *Irung Kellettee, Irung kelathi.*

Inhabits chiefly estuaries and lagoons, and sometimes up rivers in nearly freshwaters; Juveniles form dense aggregations, attains a length of 150 cm; flesh is marketable; suitable species for brackish water fish culture.

56. Plotosus lineatus (Thunberg) - Striped catfish eel.

Tamil : *Kanja kaluti*

Inhabits coastal waters and estuaries; a marine fish which penetrates brackish and freshwaters; attains a length of 30 cm.

VII ORDER : MYCTCPHIFORMES

20. FAMILY : SYNODONTIDAE (Lizard fishes)

57. *Saurida tumbil* (Bloch) - Greater Lizard fish.

Tamil : *Coolooway, Culnahmacunda, Nai meen puna*

Lives in muddy bottom of the continental shelf, enters estuaries; attains a length of 45 cm.

VIII ORDER : ATHERINIFORMES

SUBORDER : EXOCUETCIDEI

21. FAMILY : HEMIRAMPHIDAE (Halfbeaks)

58. *Hyporhamphus limbatus* (Valenciennes) - Valencienne's half beak.

Inhabits coastal waters, estuaries and freshwaters; a common species.

22. FAMILY : BELONIDAE (Garfishes, Needle Fishes)

59. *Strongylura strongylura* (Van Hasselt) - Round tail needla fish.

Tamil : *Vellai murrel, Satha murrel, Mara kola, Coshee-collarchee, Coco meen.*

Inhabits coastal areas and mangrove lined lagoons, and estuaries; attains a size of 40 cm SL; enters estuaries to spawn from September - December; filamentous eggs become entangled among algae and are prevented from drifting out to sea.

60. *Xenentodon cancila* (Hamilton-Buchanen) - Freshwater garfish.

Tamil : *Kokku meen, Kolachi, Peechu kola, Kola mooral, Vellai mooral, Kokkumeen.*

Inhabits freshwaters, primarily rivers; surface living fish, attaining a length of 40 cm.

23. FAMILY : ATHERINIDAE (Silversides)

61. *Atherinomorus duodecimallis* (Valenciennes)

Tamil : *Mottechi, Motti kola kendai.*

These fishes are small and congregate in large schools; not of much importance commercially but are widely used as baits.

62. *Hypoatherina temminckii* (Bleeker)

Barely exceeds 120 mm TL; not of importance commercially, but form forage for commercial fishes.

SUBORDER : ADRIANICHTHYOIDEI

24. FAMILY : ORYZIIDAE (Medakas or Rice fishes)

63. *Oryzias melastigma* (McClelland) - Estuarine top minnow.

Tamil : *Mundakanni*

Inhabits primarily estuarine and brackish waters, also in freshwater ponds, lakes and rivers; this delicate translucent little killifish is an excellant larvivorous fish and its utility for mosquito control is established; is a perennial breeder-from November-March; eggs remain attached to the flattened genital pad of the female and are carried about by the mother until they are hatched; grow up to four cm. in length.

SUBORDER : CYPRINODONTOIDEI

25. FAMILY : APLOCHEILIDAE (Killifishes, Topminnows)

64. *Aplocheilus blocki* (Arnold) - Dwarf pachax, Green Panchax.

Tamil : *Pachai munda kenni*

Inhabits stationery and sheltered freshwaters of tanks and rivers overgrown with vegetation; this is the smallest and prettiest known species of this genus; breeds between January and February; is a valuable larvivorous fish; males are larger and more brightly coloured than females; freely reared in aquaria as an ornamental fish and should be kept only with fishes of its own size.

26. FAMILY : POECILIDAE (Livebearers)

65. *Gambusia affinis* (Baird and Girard) - Mosquito fish.

Introduced into India from Italy in 1928 and now widely distributed for eradication of mosquito larvas; it is predaceous and active, a live-bearer, grows to 6.2 cm; hardy and can withstand all types of foul water conditions, poor fond; temperature tolerance from above freezing point to 33°C.

IX ORDER : SYNGNATHIFORMES

27. FAMILY : SYNGNATHIDAE (Pipefishes, Seahorses)

66. *Microphis brachyurus* (Bleaker)-short-tailed pipefish.

Inhabits estuaries, freshwater streams and rivers; attains a length of 12 cm; of no interest to fisheries.

67. *Microphis duncalus* (Hamilton-Buchanan)-Crocodile toothed pipefish.

Inhabits freshwaters, estuaries or low salinity habitats; attains a length of 17.5 cm. SL.

X ORDER : SCURPAENIFURMES

SUBORDER : PLATYCEPHALUIDEI

28. FAMILY : PLATYCEPHALIDAE (Flatheads)

68. *Grammoplites scaber* (Linnaeus) - Rough flathead.

Inhabits sea and estuaries.

69. *Platycephalus indicus* (Linnaeus) - Indian flathead.

Tamil : *Ool pay thy, Olupathi.*

A benthic fish found on sand or mud bottoms, taken in very shallow areas of estuaries.

70. *Platycephalus bengalensis* Visweswara Rao

Inhabits the east coasts of India and enters estuaries.

XI ORDER : PERCIFORMES

SUBORDER : PERCOIDEI

29. FAMILY : AMBASSIDAE (Snooks, Glassy perchlets)

71. *Ambassis commersoni Cuvier*

Tamil : *Sennel*

Inhabits the sea and estuaries, ascending rivers and brackish water lakes, occurrence in freshwater is rare and occasional; form cheap and tasty food resource; used as bait for other economically important fishes; main fishing season is June-September premonsoon period.

72. *Ambassis gymnocephalus* (Lacepede) - Naked-head glass prechlet.

Tamil : *Sennel*

Primarily marine, frequents estuaries and freshwaters; grows to 10 cm SL; whenever sizable catches are landed, they are invariably sun dried and sold as dry fish.

73. *Ambassis miops Gunther*

Tamil : *Sennel, Kaka sennel*

A very common species in estuaries and freshwater ditches in Madras, ascends rivers when young; attains a length of 14 cm. and is a valuable larvivore; breeds from October to December.

74. *Chanda name* Hamilton-Buchanan-Glassy perchlet.

Tamil : *Kakkachee*

Inhabits fresh and brackish waters; both in standing and running waters; attains a length of 11 cm; as low prized fishes they are preferred by many; this species could effectively be used in the control of guinea worms and also for malaria control.

75. *Pseudambassis ranga* (Hamilton-Buchanan) - Indian glass fish.

Inhabits fresh and brackish waters; an aquarium fish, it makes a nest and guards its young; it breeds everywhere during the rains; attains a length of seven cm.

30. FAMILY : SERRANIDAE (Seabasses and Oroupers)

76. *Epinephelus malabaricus* (Schneider)

It is an inshore species, often found in estuaries where they are commonly caught.

77. *Epinephelus morrhua* (Valenciennes)

Inshore species, taken commercially only occasionally.

31. FAMILY : TERAPONIDAE (Terapons)

78. *Terapon Jarbua* (Forssaki)-Jarbua therapon

Tamil : *Keechan, Palim Keetchan, Kova keetchan, Keeli*

Inhabits inshore waters and moves considerable distances upstream into freshwaters; very robust and hardy fish for brackish aquaria; attains a length of 25 cm; of no interest to fisheries in inland waters.

79. *Terapon puta* (Cuvier) - Small scaled banded grunter.

Tamil : *Kova Keetchan*

Inhabits coastal waters, sometimes enters brackish and freshwaters; attains a length of 12 cm.

80. *Terapon theraps* (Cuvier) - Large scale therapon.

Tamil : *Kutta keetchan.*

Inhabits inshore waters, a common species in brackish waters.

32. FAMILY : SILLAGINIDAE (Whitings)

81. *Sillago sihama* (Forsskal)-Silver sillage.

Tamil : *Kelakkan, Kelangan.*

Inhabits shallow sandy bottoms of shores, bays and breeding by about Beb.; juveniles are available in the estuary from close of winter till rainy season; attains a length of 25 to 30 cm.

33. FAMILY : LEIOGNATHIDAE (Silver bellies)

82. *Gazza minuta* (Bloch)-Toothed pony fish

Tamil : *Kotoo kare.*

Inhabits coastal waters, predominantly near the bottom; young enter estuaries.

83. *Leiognathus bindus* (Valenciennes)-Orange fin pony fish.

Tamil : *Tatnam kare.*

Inhabits coastal waters, enters freshwaters; attains a length of eight cm. SL.

84. *Leiognathus equulus* (Forsskal)-Common pony fish.

Tamil : *Soorookoo nam karai*

Inhabits coastal waters; juveniles enter brackish waters.

85. *Leiognathus splendens* (Cuvier) - Splendid pony fish.

Tamil : *Kaaral, Killi karai*

Inhabits coastal waters; enters estuaries and brackish waters; attains a length of 10 cm. SL.

86. *Secutor insidiator* (Bloch) - Pugnose pony fish.

Inhabits shallow coastal waters and estuaries; it is of no interest to fisheries in Inland waters though it is the dominant species in the pony fish catches on the Tamil Nadu coast.

87. *Secutor ruconius* (Hamilton-Buchanan)-Deep pugnose pony fish.

Inhabits shallow coastal waters, enters estuaries and tidal rivers; attains a length of 10 cm. SL.

34. FAMILY : LUTJANIDAE (Snappers)

88. *Lutjanus argentimaculatus* (Forsskal) - Mangrove red snapper.

Juveniles usually inhabit mangrove and shallow water areas, but adults are found to depths of 80 m.

89. *Lutjanus jonni* (Bloch)-Jonn's snapper.

Tamil : *Cheppili, Perithi velameen, Paruthi kanni, Karva, Chenganni.*

Inhabits shallow waters and mangrove areas.

35. FAMILY : GERREIDAE (Silver-biddies)

90. Gerres abbrieviatus Bleeker-Deep body Majarra.

Tamil : *Oodan*

Inhabits coastal waters down to depths of about 40 cm. near the bottom; enters estuaries, usually found in small schools.

91. Gerres filamentosus Cuvier - Whip fin mojarra.

Tamil : *Oodan*

Inhabits shallow waters, down to depths of 30m; usually found in schoals; enters estuaries.

92. Gerres limbatus Cuvier

Coastal; entering estuaries; of major fishery significance.

93. Gerres oyena (Forsskal)

Inhabits inshore waters, enters estuaries and brackish lagoons; attains a length of 30 cm. SL.

94. Gerreomorpha-setifer (Hamilton and Buchanan)

Inhabits coastal waters and estuaries, common in the commercial catches.

36. FAMILY : HAEMULIDAE (Sweet lips)

95. Pomadasys argenteus (Forsskal)

Usually inhabits coastal waters but also found in estuaries; of no interest to fisheries.

96. Pomadasys kaakan (Cuvier)

Tamil : *Corua, Coraka*

Inhabits coastal waters, at depths of about 60 m. also found in estuaries; feeds on crustaceans and fishes.

37. FAMILY : SPARIDAE (Seabreams)

97. Acanthopagrus berda (Forsskal) - Picnic seabream

Tamil : *Coorrie, Currupu mattawa.*

Inhabits seas, estuaries and freshwaters; adults and juveniles are common around river mouths and in estuaries.

98. Rhabdosargus sarba (Forsskal)-Golden lined seabream.

Tamil : *Vella mattawa.*

Inhabits coastal waters and often enters estuaries; estuaries are used as nurseries.

38. FAMILY : SCIAENIDAE (Croakers)

99. Dasysciaena albida (Cuvier) - Two bearded croaker

Tamil : *Vella kattelee, Karoom kattelee.*

Inhabits coastal waters and estuaries, ascending backwaters; attains a length of 90 cm. SL.

100. Kathala axillaris (Cuvier)

Inhabits shallow coastal waters and also estuaries; attains a length of 26 cm.

101. Nibea maculata (Schneider)

Inhabits coastal waters and estuaries.

39. FAMILY : MULLIDAE (Goatfishes)

102. Upeneus sulphureus Cuvier - Yellow goatfish

Tamil : *Sennagarai, Nagarai, Kuzhinagarai.*

Inhabits coastal waters, often entering estuaries.

40. FAMILY : DREPANIDAE (Spotted batfish)

103. Drepane punctatus (Linnasus) - Spotted sickle fish.

Tamil : *Pulli, Torriti.*

Inhabits shallow waters around coral and rocky reefs, living in the sea but entering brackish waters; common size 20 cm. SL.

41. FAMILY : NANDIDAE (Fresh water nandids)

104. Nandus nandus (Hamilton-Buchanan) - Nandus.

Inhabits fresh and brackish waters; common in ditches and inundated fields and attains a length of 20 cm. SL; highly prized, common in summer months when it is collected from dried up beds of tanks, bheels, bheries etc.

42. FAMILY : CICHLIDAE (Cichlids)

105. Etroplus maculatus (Bloch) - Pearl-spot, spotted etroplus.

Tamil : *Boorakas, Shellel, Sella kasu, Sellade kasu, Puradi.*

Inhabits fresh and brackish waters along coastal areas; this small fish attains a length of eight cm. and is not used as a food fish.

106. Etroplus suratensis (Bloch) - Banded peari-spot.

Tamil : *Karassar, Uduppatti, Pallinchan, Pani shettai, Setha kendai.*

Inhabits brackish waters and mouths of rivers; often open sea; attains a length of 40 cm. and is an excellent food fish; extensively cultivated in ponds and tanks where they breed naturally, thrive well were luxuriant growth of aquatic vegetation is available; since they are deep bodied and full of bones, they do not form prey to murrels and can be cultivated safely with them.

107. Oreochromis mossambica (Peters) - Tilapia

Tamil : *Thillappi, Jilabi meen.*

An introduced species, inhabits primarily brackish waters, also freshwaters, introduced in India in 1952 and cultured presently in the country; is a hardy fish, is unsuitable for aquaculture along with Indian major carps because of the adverse effect it causes on the growth and production of crop.

SUBORDER : MUGILOIDEI

43. FAMILY : MUGILIDAE (Mullets)

108. Liza macrolepis (Smith) - Large scale mullet.

Inhabits shallow coastal waters, estuaries and backwaters; contributes to fisheries in estuaries in Pulicat lake, the season is during August to February; attains a length of 28 cm; induced breeding by hypophysation, most common species; a good tasty fish known for its oil content.

109. Liza parsia (Hamilton-Buchanan) - Goldspot mullet.

Tamil : *Chiraya kendai, Madaya kendai, Madavai.*

Inhabits shallow coastal waters, estuaries and lagoons, entering tidal rivers, grows to a length of 40 cm; spawning takes place in the sea.

110. Liza subviridis (Valenciennes) - Greenback grey mullet.

Inhabits coastal waters and estuaries; attains a length of 25 cm.

111. Liza tade (Forsskal) - Tade grey mullet.

Primarily marine, but entering estuaries and backwaters; attains a length of 47 cm; capable of adopting to freshwater; cultivated in brackish waters, but does not breed in confined waters.

112. Liza vaigiensis (Quoy and Gaimard) - Diamond scaled grey mullet.

Marine, enters rivers during the rainy season, as far as the tides reach; attains a length of 30 cm.

113. *Mugil cephalus* Linnaeus - Flathead grey mullet.

Tamil : *Madavai.*

Inhabits seas, estuaries and rivers; most common species of mullet and is capable of surviving in ponds with a high salinity.

114. *Rhinomugil corsula* (Hamilton-Buchanan)-Corsula mullet.

Tamil : *Mazhugu meen*

Inhabits fresh and brackish water; cultivated.

115. *Valamugil cunnesius* (Valenciennes) - Long-fin mullet.

Inhabits shallow coastal waters, estuaries and backwaters, frequently entering freshwater; breeds in natural waters during the south-west monsoons; grows to 30 cm. in length.

116. *Valamugil seheli* (Forsskal) - Blue-spot Grey mullet.

A schooling species entering brackish and freshwaters; grows to a length of 25 cm.

44. FAMILY : SIGANIDAE (Rabbit fishes, Spine feet.)

117. *Siganus lineatus* (Valenciennes) - Golden lined spine foot.

Occurs in schools in coastal areas, rarely enters estuaries; recorded from Ennore estuary.

45. FAMILY : CALLIONYMIDAE (Oragonets)

118. *Callionymus japonicus* Hottuyn - Japanese dragonet.

Coral reefs, enters estuaries, identified from Ennore.

SUBORDER : GOBIOIDEI

46. FAMILY : GOBIIDAE (Gobies)

119. *Acentrogobius cyanomos* (Bleeker)

Inhabits seas and estuaries; attains a length of nine cm SL.

120. *Acentrogobius ennorensis* Menon and Rama Devi

Endemic to Ennore estuary, maximum size recorded is 5.8 cm.

121. *Acentrogobius caninus* (Cuvier and Valenciennes)

Attains a length of 133 cm.

122. *Acentrogobius globiceps* (Hora)

Attains a length of three cm.

123. Acentrogobius grisseus (Day)

Inhabits coasts and estuaries; attains a length of eight cm SL.

124. Acentrogobius madraspatensis (Day)

Inhabits seas and estuaries; attains a length of seven cm SL.

125. Acentrogobius Viridipunctatus (Valenciennes)-Green spotted goby.

Inhabits seas and estuaries; attains a length of six cm SL.

126. Awaous gutum (Hamilton-Buchanan)-Scribbled goty.

Inhabits rivers and estuaries; attains a length of 14 cm SL.

Tamil : *Coondallum, Coondallum uluvai.*

127. Favonogobius reichai (Bleeker)

Inhabits seas and estuaries; attains a length of seven cm SL.

128. Glossogobius biocellatus (Valenciennes)

Inhabits coastal waters and estuaries; attains a length of 10 cm SL.

129. Glossogobius giuris (Hamilton-Buchanan)-Bar-eyed goby.

Tamil : *Nullatan, Uluvai, Oolooway.*

Inhabits primarily fresh water and estuaries; also in sea forms a minor fisheries attains a length of 30 cm.

130. Mahidolia mystacina (Valenciennes)

Recorded from the east coast of India, from the Godavary and Ennore estuaries.

131. Oligolepis acutipennis (Valenciennes)

Inhabits muddy estuaries and coastal bays; attains a length of nine cm. SL.

132. Oligolepis cylindricepts (Pora)

In brackish waters; attains a length of 2.5 cm. SL.

133. Oxyurichthys microlepis (Bleeker)

Very common in Pulicat and Ennore estuaries; attains a length of 13.5 cm.

134. Oxyurichthys tentacularis (Cuvier and Valenciennes)

Common in Ennore estuary attains a length of 14.5 cm.

135. Parachaeturichthys polynem (Bleeker)

Inhabits primarily the sea and enters estuaries; attains a length of 10 cm. CL.

136. Stigmatogobius javanicus (Bleeker)

Inhabits seas, estuaries and rivers; attains a length of 4.5 cm.

137. Yongeiehthys criniger (Cuvier and Valenciennes)

Inhabits seas and estuaries recorded from Ennore; maximum length observed 86 mm. SL.

SUBFAMILY : APOCRYPTEINAE

138. Boleophthalmus boddarti (Pallas)

Inhabits rivers, estuaries and sea; this species attains a length of 15 cm. SL and is of no interest to fisheries.

139. Boleophthalmus sculptus Gunther

Inhabits coastal areas and estuaries; recorded from Ennore estuary.

140. Oxuderces centatus Eydoux and Souleyet

Inhabits coasts and estuaries; attains a length of about eight cm. SL.

141. Parapocryptes rictuosus (Valenciennes)

Inhabits muddy coast and estuaries; attains a length of 15 cm. SL.

142. Pseudapocrypeas lanceolatus (Bloch & Schneider)

-Pointed tailed goby.

Inhabits sea, estuaries and freshwater; attains a length of 18 cm. SL; contributes to a minor fishery, but is not relished much.

SUBFAMILY : PERIOPHTHALMINAE

143. Periophthalmus chrysospilos Bleeker

Inhabits streams, ponds and estuaries; attains a length of 10 cm. SL.

144. Periophthalmus Variabilis Eggert

Inhabits ponds and brackish waters; attains a length of seven cm. SL.

SUBFAMILY : SICYDIAPHIINAE

145. Gobiopterus chunc (Hamilton-Buchanan)

Inhabits brackishwaters and estuaries; attains a length of 27 mm.

146. *Sicyopterus griseus* (Day)

Inhabits estuaries and backwaters; attains a length of 6.5 cm. SL; fairly common in the Madras backwaters of not interest to fisheries.

47. FAMILY : ELEOTRIDAE (Sleepers)

147. *Eleotris fusca* (Schneider) - Brown grudgeon.

Tamil : *Kul uluvay, Mussoarie, Kal uluvai.*

Inhabits estuaries; occurs throughout the estuary particularly in the mangrove creeks in lower reaches attains a length of 17 cm.

48. FAMILY : GUBIOIDIDAE (Eel-like gobies)

148. *Brachyamblyopus urolepis* (Bleeker)

Inhabits rivers and estuaries; attains a length of 7 cm; of no interest to fisheries.

149. *Odontamblyopus rubicundus* (Hamilton-Buchanan)

Inhabits coastal waters and estuaries; attains a length of 25 cm; of very little fisheries interest.

150. *Teenioides anguillaris* (Linnaeus) - Eel goby.

Inhabits estuaries; attains a length of 40 cm; of no interest to fisheries.

151. *Teenioides buchanani* (Day) - Eel goby.

Inhabits river mouths and estuaries; attains a length of about 30 cm; of no interest to fisheries.

152. *Taenioides cirratus* (Blyth) - Eel goby.

Inhabits coastal waters and estuaries; attains a length fo 25 cm; these eelgobies make small burrows in the shallow regions within tidal limits; the fish is capable of living out of water for considerable time by taking air into the branchial chamber.

49. FAMILY : TRYPAUCHENIDAE (Burrowing-gobies)

153. *Ctenotrypauchen microcephalus* (Bleeker)

Inhabits estuaries; attains a length of 18 cm.

154. *Trypauchen vagina* (Bloch & Schneider) - Burrowing goly.

Tamil : *Navettee.*

Inhabits seas and estuaries; attains a length of 22 cm.

SUBORDER : ANABANTOIDEI

50. FAMILY : ANABANTIDAE (Climbing perches)

155. *Anabas testudineus* (Bloch) - Climbing perch.

Tamil : *Sennal, Pauni eyri, Panaieeri kendai.*

Inhabits fresh and brackish waters; mostly in canals, lakes, ponds, and swamps; hardy fish of considerable fisheries interest; caught from drying water bodies or when prowling on wetland; highly esteemed food fish, suitable for cultivation in ponds, reservoirs and ride fields, singly or with other species; attains a length of 25 cm.

51. FAMILY : BELONTIDAE (Gouramies)

SUBFAMILY : MACROPODINAE (Paradise fishes)

156. *Macropodus cupanus* (Valenciennes)-Paradise fish.

Tamil : *Punnah, Pauni.*

Inhabits freshwater ponds and ditches of low country; a hardy aquarium species; also a good larvicidal fish; attains a length of 7.5 cm.

SUBFAMILY : TRICHOGASTERINAE (Gouramies)

157. *Colisa fasciatus* (Schneider)-Banded colisa.

Inhabits rivers, estuaries, also tanks, ditches and ponds; a peaceful and beautiful aquarium fish; attains a length of 12 cm; easily bred, is also a food fish.

52. FAMILY : OSPHRONEMIDAE (Giant Gouramy)

158. *Osphronemus goramy* Lacepede - Giant gouramy.

Tamil : *Sangara*

Introduced species, one of the most celebrated of Asian food fishes and also an aquarium fish, hardy; mainly herbivouous, but also eats insects, worms and shrimp; successfully cultured; eggs are laid on aquatic weeds and grasses, nests are made at the shallow margin of the water, guarded by the parents; attains a length of 60 cm; do not thrive in brackish or saline waters.

SUBORDER : CHANNOIDEI

53. FAMILY : CHANNIDAE (Snakeheads, Murrels)

159. *Channa orientalis* Bloch & Schneider - Brown snakehead.

Tamil : *Para koravai, Manian Koravai*

Inhabits mountain streams and low land waters; widely distributed; its marked amphibious mode of life accounts for the variation exhibited by the species; includes forms with and without pelvic fins (the latter known from Sri Lanka, Burma and Java); this species is the smallest member of the genus; attains a length of 13 cm. SL; of minor interest to fisheries.

160. Channa punctatus (Bloch) - Green snakehead.

Tamil : *Korava, Para korava, Pottai, Maniany koravai.*

Inhabits large freshwater ponds and tanks, generally in the plains; prefers stagnant waters in muddy streams; prolific breeder, breeds almost throughout the year; attains a length of 31 cm.

161. Channa striatus (Bloch) - Striped snake head.

Tamil : *Virahi, veralu, Carrupu veral.*

Inhabits freshwater ponds, streams and tanks of plains; prefers stagnant muddy waters and grassy tanks; fairly common and is the mainstay of tank fishery in Tamil Nadu; breeds almost throughout the year; attains a length of 60-70 cm; tolerates slightly brackish water.

SUBORDER : MASTACEMBELOIDEI

54. FAMILY : MASTACEMBELIDAE (Spiny eels)

162. Macrognathus aral (Bloch & Schneider) - Lesser spiny eel.

Tamil : *Aral, Man aral, Cul.*

Inhabits both running and stagnant fresh and brackish waters of low lands and in moderate elevation in all the larger river systems; attains a length of 38 cm. and is considered a wholesome food-fish.

163. Macrognathus pancalus Hamilton-Buchanan-Spiny eel

Tamil : *Pil aral.*

Inhabits rivers of plains and estuaries, also slow and shallow waters, never above an altitude of 366 m; attains a length of 18 cm; of little commercial importance; often kept in aquaria; inhabits the floor and spawns in the upper water-level.

164. Mastacembelus armatus (Lacepede) - Spiny eel.

Tamil : *Kul aral, Shah-ta-rah.*

Inhabits fresh and brackish waters in plains and hills; attains a length of 61 cm. and is the largest spiny eel; very good food fish; common during the summer months.

XII ORDER : PLEURONECTIFORMES

SUBORDER : SOLEOIDEI

55. FAMILY : SOLEIDAE (Soles)

165. Euryglossa orientalis (Bloch & Schneider)

Inhabits inshore coastal waters; enters estuaries and also fresh waters; attains a length of 18 cm; of no interest to fisheries.

166. Synaptura albomaculata kaup

Inhabits shallow coastal waters, enters estuaries; attains a length of 30 cm; of no interest to fisheries.

XII ORDER : TETRAODONTIFORMES

SUBORDER : BALISTOIDEI

56. FAMILY : TRIACANTHIDAE (Tripod fishes)

167. Iriacanthus biaculeatus (Bloch) - Short nosed triped fish.

Tamil : *Moolean.*

Inhabits shallow coastal waters and estuaries; breeds in lakes during rainy months; of no interest to fisheries.

SUBORDER : TETRAODONTOIDEI

57. FAMILY : TETRAODONTIDAE (Puffer fishes)

168. Chelonodon patoca (Hamilton-Buchanan)-Shaggy fishing frog.

Inhabits coastal waters, entering the lower courses of rivers and lagoons; of no interest to fisheries.

169. Laqocephalus lunaris (Bloch & Schneider) - Rough-backed blow fish.

Primarily marine, enters estuaries; attains a length of 30 cm; of no interest to fisheries.

170. Takifugu oblongus (Bloch)

Inhabits shallow coastal waters; enters brackish waters; of no interest to fisheries.

Climate

The climate of this district is characterised by an oppressive summer and good seasonal rainfall. The year may be divided into four seasons. The summer season from March to May is followed by the southwest monsoon season from June to September. October and November constitute the post monsoon or retreating monsoon season. The period from December

to February is the north-east monsoon season, with the associated rains being confined to December[42].

Rainfall

Records of rainfall in the district are available for 17 stations for periods ranging from 17 to 91 years. *Appendices 3 and 4* give the rainfall at these stations and for the district as a whole. The average annual rainfall in the district is 1155.4 mm. The rainfall in the district in general decreases from the coast towards the interior and varies from 819.9 mm. at Rama krishnarajupet to 1315.5 mm. at Saidapet. The rainfall during the southwest monsoon season, June to September, amounts to about 35 per cent of the annual normal rainfall. About 55 per cent of the annual normal rainfall is received during the period, October to December, November being the rainiest month. The variation in the rainfall from year to year is appreciable. During the 50 year period, 1901 to 1950, the highest annual rainfall amounting to 163 per cent of the normal occurred in 1946. The lowest annual rainfall which was 54 per cent of the normal occurred in 1904. In the same 50 year period, annual rainfall in the district is less than 80 per cent of the normal in eight years, - two consecutive years of such low rainfall occurring twice. Considering the rainfall at the individual stations, rainfall less than 80 per cent of the normal in two consecutive years occurred five times at Poonamallee, four times at Madurantakam and once or twice at nine other stations. Three or four consecutive years of such low rainfall have occurred once or twice at nine out of the 17 stations. It will be seen from *appendix-4* that the annual rainfall in the district was between 801 and 1400 mm. in 37 years out of 50.

On an average, there are 53 rainy days [(*i.e.)* days with rainfall of 2.5 mm. or more] in a year in the district. Except at Ramakrishnarajupet and Pallipat which have 31 and 46 rainy days respectively in a year, the number of rainy days at the other stations varies from 53 at Vayalur to 59 at Kovalam and Meenambakkam.

The heaviest rainfall in 24 hours recorded at any station in the district was 457.2 mm. at Kancheepuram in October 1943.

Temperature

There is a meteorological observatory in the district at Meenambakkam. The records of this observatory may be taken as representative of the Meteorological conditions prevailing in the district in general. Temperatures increase steadily from about the middle of February. May is the hottest month with the mean daily maximum temperatute at 37.6°C and the mean daily minium at 27.8°C. Due to high moisture content in the air the weather is oppressively hot during the hot season particularly, in the interior of the district. Afternoon sea breezes bring welcome relief in the

coastal areas. During the summer, the day temperature often exceeds 42°C. With the onset of the south west monsoon by about the beginning of June, temperature decreases slightly and the weather becomes a little milder than in the summer season. After the withdrawal of the south west monsoon by about the end of September, temperature begins to decrease, December and January form the coolest part of the year with the mean daily maximum temperature of about 28°C and the mean daily minimum of about 20°C.

The highest maximum temperature recorded at Meenambakkam was 44.3°C on 1980 May 22. The lowest minimum was 15.6°C on 1946 January 9.

Humidity

In general, high humidities prevail throughout the year in the coastal areas. In the interior parts of the district, humidity may be slightly less.

Cloudiness

During the south west monsoon and post monsoon seasons and the early part of the north east monsoon season, skies are generally heavily clouded and overcast on some days. Cloudiness decreases thereafter. In April and May, afternoons are more clouded than the mornings.

Winds

Winds are generally moderate with some strengthening in force in the first half of the south west monsoon season and in the north east monsoon season. In the period, October to May, the winds in the afternoons are stronger than in the mornings. In the south west monsoon season, winds are south westerly to westerly in the mornings and mainly south easterly to southerly in the afternoons. In October, winds are from directions between south west and north west in the mornings and between north east and south east in the afternoons. During the period, November to January, winds from directions between northwest and north east are more common in the mornings while in the afternoons they are more from directions between north and east. In February and March, winds are somewhat variable in direction in the mornings and mainly from the east or south east in the afternoons. In April and May, southerlies and south westerlies predominate in the mornings, while in the afternoon, south easterlies are more common.

Special Weather Phenomena

Storms and depressions originating in the Bay of Bengal during the post monsoon and early part of the north east monsoon season cross the east coast and cause widespread heavy rain and gusty winds. Thunderstorms occur during the summer and post monsoon periods. Even in the south west monsoon season, rainfall is often associated with thunder.

Appendices 5 to 7 give the temperature and humidity, mean wind speed and special weather phenomena respectively for Meenambakkam.

APPENDIX - 1

List of Reserve Forests in Chengalpattu - M.G.R. District

Sl. no. (1)	*Name of the Range & R.F.* (2)	*Area in hectares* (3)	*Notification number and date under Section 16 of Tamil Nadu Forests Act 1882.* (4)
	Chengalpattu Range		
1.	Kattankolathur	295.84	G.O.639, dt.11.8.1890 G.O.383/13.8.1898
2.	Appur	761.65	G.O.Letter No.505/20.11.1890
3.	Paranur	257.79	G.O.No.110/26.2.95 & 281/23.6.1896.
4.	Hanumanthaputheri	231.08	G.O.No.110/26.2.95 & 281/23.6.1896.
5.	Thirumani	304.69	G.O.No.3471/20.11.1911 & G.O.No.67/2.2.1898.
6.	Salur	384.03	G.O.449/dt.8.9.96 & 999, dt. 29.3.1910.
7.	Thirukalikundram	933.55	G.O.1002/5.9.1885 & 127/9.3.1885 & 770/8.9.1891.
8.	Nemmeli	522.28	G.O.284/dt.23.6.1891
9.	Oragadam	414.46	G.O.67/dt.2.2.1898.
10.	Navalur	114.13	St.George Gazette of Page No.20 of 1895.
11.	Sengundram	446.95	No.306/30.4.1891, 1016/24.11.1898 & 166/23.2.1977.,
12.	Thirutheri	336.31	No.921/16.11.1889 & 35/23/23.1.1895.
13.	Vallam	698.51	No.700/20.9.1897
14.	Anjur	658.44	No.187/10.3.1891 & 609/26.10.1898.
15.	Sirukundram	608.00	No.306/13.4.1891 & 255/3.4.1891.
16.	Meyyur	132.82	Govt.letter No.48510/ FR III/80-8, dt.16.5.1980 G.O.No.444/16.6.1890.
	Kelambakkam Range		
1.	Illalur	350.47	G.O.293, dt. 30.6.1899
2.	Madayathur	399.84	G.O.473/25.8.1898 & 360/6.1899
3.	Alathur	284.90	G.O.394/2.5.1891 & 2342/1.8.1911 G.O.617/26.10.1898
4.	Kattur	1373.55	G.O.483/dt.20.6.1890 & 546/22.9.1898

APPENDIX-1 *(Contd.)*

(1)	*(2)*	*(3)*	*(4)*
5.	Sonalur	552.41	G.O.No.175/28.12.1890 & 9464/14.8.1898
6.	Kalvoy	28.99	G.O.No.104/4.2.1890
7.	Thaiyur	613.12	G.O.421/9.6.1890
8.	Kolathur	755.17	G.O.146/26.3.1890
9.	Mambakkam	517.20	G.O.No.89/9.2.1890
10.	Kayar	448.81	G.O.No.113/6.2.1890
11.	Ammanambakkam	48.09	Govt.Letter No.48510/FRIII/ 80-8 dt.19.9.1981
12.	Thandalam	102.51	Govt.Letter No.2184/FRIII/ 80-2 dt.19.4.1980
Tambaram Range			
1.	Vandalur	1172.01	G.O.No.358/21.5.1886, 925/20.10.1896
2.	Unamanjeri	307.17	G.O.No.55/30.6.1890
3.	Kumili	487.94	G.O.No.152/7.4.1891
4.	Gudalur	718.10	G.O.No.938/7.9.1892 and 458/17.8.1890, 428/20.9.1898
5.	Vattambakkam	329.43	G.O.No.365/24.4.1891 & 657/8.11.1890
6.	Nallur	365.44	G.O.No.144/18.2.1890
7.	Mannur	223.80	G.O.No.205/22.3.1890
8.	Maganium	386.48	G.O.No.206/18.3.1890
9.	Pudupair	145.29	G.O.No.239/28.3.1890
10.	Vadakkupattu	287.34	G.O.No.664/15.3.1890
11.	Erumaiyur	68.79	G.O.No.508/30.6.1890
12.	Madurantakam	182.52	G.O.No.1031/20.12.1890
13.	Perumbakkam	45.73	G.O.No.953/22.11.1890
14.	Pulikoradu	74.92	G.O.No.390/8.6.1890
15.	Tambaram	92.52	G.O.No.539/17.7.1890
16.	Nanmangalam	320.92	G.O.No.965/15.9.1900 & 118/21.2.1898.
Madurantakam			
1.	Valluvapakkam	247.68	G.O.No.241/dt. 12.4.1899
2.	Koliyalam	339.54	G.O.No.771/dt. 8.9.1897
3.	Acharapakkam	411.57	G.O.No.836/dt. 24.12.1895
4.	Gudalur A & B	521.79	G.O.No.3421/dt. 15.11.1911
5.	Kattugudalur	985.04	G.O.No.850/dt. 30.11.1890
6.	Rajapalayam	161.07	G.O.No.843/dt. 23.11.1894
7.	Neerpair	51.50	G.O.No.458/dt. 16.8.1979
8.	Chettikunnu	13.83	G.O.No.820/dt. 31.7.1979
9.	Palayur	9.53	
10.	Puriyambakkam	16.15	Govt.Letter No.2196/FRIII/ 80-2, dt. 14.4.1980

APPENDIX-1 *(Contd.)*

(1)	(2)	(3)	(4)
11.	Thottacheri	355.95	Govt.Letter No.14401/FRIII/ dt. 16.9.1982
12.	Kavanipakkam	286.53	G.O.No.234/dt. 7.4.1899
13.	Perungoli	258.36	G.O.No.3012/10.10.1911 G.O.No.330/dt. 12.10.1911 & G.O.No.37/dt. 1.2.1975
14.	Edamachi	342.78	G.O.No.213/dt. 29.3.1899
15.	Maduram	455.29	G.O.No.801/dt. 8.8.1900
16.	Punganam	86.79	Govt.Letter No.32615/FR/III/ 84-8, dt. 24.10.1984
17.	Kollathanallur	106.75	Govt.Letter No.69521/FRIII/ 34-4, dt. 7.3.1985
18.	Chittarkadu	140.67	Govt.Letter No.69521/FRIII/ 1984
19.	Palavoor	76.76	Govt.Letter No.58521/FRIII/ 84, dated 19.2.1985
Tiruvallur			
1.	Mittanamallee	95.51	G.O.No.682/dt. 28.11.1890
2.	Kovilpadugai	348.04	G.O.No.821/dt. 12.8.1891
3.	Thandarai	150.30	G.O.No.49/dt. 6.2.1886
4.	Erumaivettipalayam	215.30	G.O.No.568/dt. 27.6.1893
5.	Irugulam	252.53	G.O.No.260/dt. 28.3.93
6.	Nemalur	258.65	G.O.No.310, 310/A20/1893
7.	Manali	547.96	G.O.No.843/dt. 28.9.1893
8.	Siruvada	154.19	G.O.No.277, 277A/dt. 6.4.1893
9.	Palavakkam	1293.42	G.O.No.1122/dt. 21.11.1891
10.	Senjiagaram	131.52	G.O.No.367/367A dt.24.5.1991
11.	Allikuli	2650.78	G.O.No.332/332A dt. 28.8.1887
12.	Nayapakkam	472.68	G.O.No.375/dt. 2.3.1895
13.	Pullarambakkam	99.83	G.O.No.355/dt. 18.5.1888
14.	Mylapore	454.88	G.O.No.493/dt. 26.5.1988
15.	Vembedu	339.54	G.O.No.355/dt. 18.5.1888
16.	Pulikundram-I	39.38	Govt.Lr.No.56658/FR.III/ 81-5 F&F DEPT. dt. 4.2.1981.
17.	Pulikundram-II	13.51	Govt.Lr.No.1769/FRIII/ 81-5 F&F dept., dt.1-10-1981.
18.	Pulikundram extn.-III	29.54	G.O.Ms.No.396/F&F dt. 28.4.79
19.	Nemalur extn.	19.06	Lr.No.2197/F.III/80-9 F&F dept. dt. 6.3.81.
20.	Malandur	101.24	Govt.Lr.No.66479/FRIII/ 81-4, dt. 2.2.82.
21.	Gopalakrishnapuram	40.47	Govt.Lr.No.24124/FRIII/80-4 F&F dept. dt. 11.9.80.
22.	Thirumalairajpet	11.18	Govt.Lr.No.65570/FRIII/83-3 F&F dept. dt. 25.11.83.
23.	Velacheri	26.01	Govt.Lr.No.14476/FRIII/8-6 dt.22.6.84.

APPENDIX-1 *(Contd.)*

(1)	(2)	(3)	(4)
24.	V.K.N. Kandigai	40.69	Govt.G.O.32613/FRIII/84-4, dt.26.7.84.
25.	Venugopalapuram	63.76	Govt.Lr.No.39186/FR/III/84 F&F dt. 30.10.84.
26.	T.C. Kandigai	24.68	Govt.Lr.No.41090/FRIII/84-10 dt. 23.1.85
27.	Pullur East	42.18	Govt.Lr.No.58510/FRIII/4.4 F&F dt. 2.2.85
28.	Peddanagapudi extn.	6.57	Govt.Lr.No.58520/FRIII/84-4 F&F, dt. 25.2.85.
29.	Venkatarajakuppam	157.43	Govt.Lr.No.58516/FRIII/84-30 dt. 14.2.84.
30.	Periapuliyur	82.01	Govt.Lr.No.58507/FRIII/84-4 dt. 25.2.85.
31.	Pedianagapudi	188.83	Govt.Lr.No.58020/FRIII/84-4 dt. 25.2.85.
32.	Periapuliyur extn.	264.35	Govt.Lr.58518/FRIII/84 dt. 25.2.85.
33.	Kuppam	35.04	Govt.58515/FRIII/84-4, dt. 25.2.85.
34.	Nochili	50.26	Govt.65104/FRIII/84-6, dt. 7.3.85.
35.	S.V.G.Purem extn.	56.81	Govt.59185/FRIII/84-6, dt. 15.5.85.
36.	Vediyankadu Bit I to IV	38.74	Govt.58589/FRIII/84-4, dt.20.2.85.
37.	Vengal R.F	606.18	Govt.Lr.No.28404/FRIII/36-1, F&F dt. 25.9.87.
38.	Pulikundram Proper R.F	1742.76	Govt.No.32053/FRIII/85-8, dt. 23.1.86.
39.	Panchalai R.F	135.30	Govt.Lr.No.58523/FRIII/84-1, F&F dept. dt. 24.2.86.
40.	Pulikundram extension IV R.F	34.06	Govt.Lr.No.58514/FRIII/84-4, F&F dept. dt. 2.2.85.
41.	Athipattu R.F	30.49	Govt.Lr.No.39678/FRIII/85-6, F&F dept. dt. 21.2.86.
42.	Vediankadu West Bit I R.F	26.30	Govt.Lr.No.58504/FRIII/84-5, F&F dept. dt. 12.3.85.
43.	Vanganoor R.F	212.46	Govt.Lr.No.61548/FRIII/84-8, F&F dept. dt. 22.8.85.
44.	Veeraraghavapuram R.F	95.68	Govt.Lr.No.4157/FRIII/88-2, F&F dept. dt. 2.3.88.
45.	Agoor R.F	58.15	Govt.Lr.No.26164/FRIII/87-4, F&F dept. 23.9.87.

Abstract

1.	Chengalpattu Range	7299.64
2.	Kelambakkam Range	5475.06
3.	Tambaram Range	5208.40
4.	Madurantakam Range	4897.88
5.	Tiruvallur Range	12103.24

APPENDIX-2

Blockwise groundwater potential in Chengalpattu-MGR District (As in January 1992) excluding saline area

S. no.	Block	Method Adopted	Ground water recharge (ha.m)	Utili-sable Ground water recharge (ha.m)	Net Ground water Draft (ha.m)	Balance Ground water available for dev-lopment (ha.m)	Stage of Ground water Development		Probable Number of wells feasible
							as on date %	at year 5 %	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1	R.K.Pet	WTF	6383	5425	5740	-315	105	108	-
2	Acharapakkam	WTF	9833	8358	1258	7100	15	18	3846
3	Lathur*	WTF	1555	1322	955	367	72	75	199
4	Sithamur*	WTF	9239	7853	3863	3990	49	52	2161
5	Maduranthakam	WTF	18640	15844	10902	4942	69	72	2677
6	Thirukalikundram*	WTF	8152	6929	4222	2707	61	64	1466
7	Thiruporur*	WTF	5995	5096	2107	2989	41	44	1619
8	Kattankulathur	WTF	11257	9568	5202	4366	54	57	2365
9	Uthiramerur	WTF	13673	11622	7064	4558	60	63	2469
10	Wallajabad	WTF	12078	10266	2828	7438	28	31	4029
11	Kancheepuram	WTF	10249	8712	4569	4142	52	55	2244
12	Kundrathur	WTF	9824	8350	3748	4602	44	47	2493
13	Sriperumpudur	WTF	12400	10540	2072	8468	20	23	4587
14	Parankimalai*	WTF	2904	2468	797	1671	32	35	905
15	Tiruttani	WTF	5613	4771	3113	1658	65	68	898
16	Kadambathur	WTF	7247	6160	1580	4580	26	29	2480
17	Ellapuram	WTF	6436	5471	2574	2897	47	50	1569
18	Gummidipoondi	WTF	11542	9811	1578	8233	16	19	4460
19	Pallipattu	WTF	4767	4052	2224	1828	55	58	990
20	Thiruvalangadu	AN	3926	3337	3607	-270	108	111	-
21	Minjur*	WTF	6537	5556	9642	-4086	173	176	-
22	Sholavaram	WTF	8150	6928	6078	1850	88	91	460
23	Poondi	WTF	7795	6626	9324	-2698	141	144	-
24	Tiruvallur	WTF	6421	5458	6388	-930	117	120	-
25	Madhavaram*	WTF	2276	1935	2421	-486	125	128	-
26	Villivakkam	WTF	6254	5316	3699	1617	70	73	876
27	Poonamallee	WTF	6070	5160	4151	1009	81	84	547
	TOTAL		215216	182934	111706	71228	61	64	38582

Note : * Excluding saline area

APPENDIX - 3

Normals and Extremes of Rainfall

Station	No. of years of data		January	February	March	April	May	June	July	August	September
Athipet	50	a	37.9	8.9	8.1	13.2	30.2	41.4	74.4	98.3	114.8
		b	1.8	0.7	0.4	0.8	1.0	3.7	6.6	7.5	6.3
Cheyyur	50	a	45.5	12.7	17.3	21.3	31.5	36.6	75.2	129.3	130.1
		b	2.3	0.9	0.8	1.2	1.3	2.9	5.8	7.4	7.1
Kancheepuram	50	a	33.0	9.9	13.5	18.0	53.6	67.6	102.4	144.0	146.5
		b	1.8	0.6	0.7	0.8	2.6	4.3	6.5	7.9	7.7
Kovalam	50	a	50.5	16.0	16.3	13.2	31.0	46.7	93.5	131.3	140.7
		b	2.4	0.9	0.8	1.1	1.2	3.6	6.6	8.3	6.7
Meenambakkam	17	a	31.5	6.3	16.5	24.1	57.7	55.9	95.3	130.3	130.1
		b	1.9	0.4	0.8	1.1	1.8	4.5	7.4	9.1	7.8
Saidapet	50	a	48.3	13.7	15.5	16.5	35.8	44.2	86.9	123.7	126.5
		b	2.0	0.6	0.5	0.9	1.3	3.6	6.3	7.1	6.7
Ponneri	50	a	42.9	10.4	15.0	14.0	34.5	47.7	79.3	100.6	117.9
		b	1.8	0.6	0.6	0.9	1.3	3.7	6.3	6.8	6.5
Sriperumbudur	50	a	37.3	7.6	9.9	18.8	37.9	55.1	86.9	129.5	130.8
		b	1.5	0.6	0.5	1.0	1.9	3.9	6.2	7.7	7.1
Uthiramerur	50	a	35.8	15.2	15.2	21.3	46.0	59.7	99.1	154.2	161.3
		b	1.7	0.7	0.6	1.1	2.1	3.9	6.4	8.3	7.6

APPENDIX - 3 *(Contd.)*

October	*November*	*December*	*Annual*	*Highest annual rainfall as % of normal & year ***	*Lowest annual rainfall as % of normal & year ***	*Heaviest rainfall in 24 hours **	
						Amount (mm)	*Date*
322.8	350.0	128.3	1228.3	203	34	348.7	1994 Oct 26
10.0	10.3	4.9	54.0	(1946)	(1904)		
256.0	345.7	138.7	1239.9	165	51	379.2	1920 Nov 26
10.5	10.9	5.4	56.5	(1931)	(1949)		
208.5	222.3	94.7	1113.0	177	57	457.2	1943 Oct 10
8.9	9.0	4.0	54.8	(1903)	(1927)		
302.3	329.4	136.9	1307.8	167	49	239.5	1902 Oct 28
10.7	10.7	5.5	58.5	(1946)	(1904)		
231.9	304.5	129.0	1214.1	172	64	346.6	1976 Nov 25
10.0	9.4	4.5	58.7	(1946)	(1951)		
302.8	362.7	138.9	1315.5	160	47	450.0	1968 Sep 27
10.1	10.3	4.9	54.3	(1943)	(1904)		
289.1	355.6	134.4	1241.4	205	38	348.7	1952 May 22
9.6	10.6	4.8	53.5	(1946)	(1904)		
202.2	243.1	102.9	1062.0	174	53	416.1	1943 Oct 10
9.1	9.1	4.2	52.8	(1903)	(1948)		
203.7	243.1	112.0	1166.6	162	54	225.0	1943 Oct 10
8.7	8.9	4.4	54.4	(1946)	(1950)		

APPENDIX - 3 *(Contd.)*

Station	*No. of years of data*		*January*	*February*	*March*	*April*	*May*	*June*	*July*	*August*	*September*
Vayalur	47	a	36.1	10.2	6.9	10.9	30.2	38.6	78.0	95.0	104.1
		b	1.8	0.6	0.3	0.7	1.3	3.5	6.4	6.9	6.1
Madurantakam	50	a	42.9	10.9	14.0	23.6	46.0	42.9	92.5	143.0	168.7
		b	2.1	0.7	0.7	1.0	1.9	3.4	6.1	8.0	7.8
Tiruvallur	50	a	43.4	13.2	12.7	16.0	42.7	54.6	95.8	123.9	143.3
		b	1.8	0.8	0.6	0.9	2.1	4.7	7.2	8.1	8.0
Poonamalle	50	a	48.8	9.1	16.3	17.8	35.1	51.1	88.9	128.0	140.2
		b	1.9	0.7	0.7	0.9	1.4	3.7	6.4	7.1	6.8
Chengalpattu	50	a	37.9	10.7	13.5	21.1	36.8	51.8	97.8	141.7	159.8
		b	2.0	0.8	0.8	1.1	1.6	3.5	6.3	7.8	7.4
Tiruttani	50	a	37.9	13.2	15.0	16.3	54.6	69.3	98.8	127.3	147.8
		b	1.6	0.7	0.5	1.0	2.9	4.7	6.9	8.3	7.6
Pallipat	22	a	12.9	9.9	13.2	29.5	54.6	67.6	88.1	116.8	123.2
		b	0.7	0.5	0.6	1.5	2.1	4.5	6.0	6.9	6.8
Ramakrishnarajupet	22	a	7.6	13.2	15.2	21.1	56.4	60.7	70.4	113.5	141.5
		b	0.3	0.3	0.4	1.0	2.2	3.5	4.0	4.8	4.7
Chengalpattu M.G.R. District		a	37.1	11.2	13.8	18.6	42.0	52.4	88.4	125.3	136.9
		b	1.7	0.7	0.6	1.0	1.8	3.8	6.3	7.5	7.0

(a) Normal rainfall in mm (b) Average number of rainy days (days with rain of 2.5 mm or more)
* Based on all available data up to 1980. ** Years given in brackets.

APPENDIX - 3 *(Contd.)*

October	November	December	Annual	Highest annual rainfall as % of normal & year **	Lowest annual rainfall as % of normal & year **	Heaviest rainfall in 24 hours *	
						Amount (mm)	Date
303.8	328.7	123.4	1165.9	172	36	357.9	1915 Nov. 14
10.1	10.3	4.7	52.7	(1946)	(1904)		
227.8	291.3	138.9	1242.5	153	50	436.9	1874 May. 05
9.6	9.9	5.1	56.3	(1946)	(1904)		
213.1	247.1	106.9	1112.7	166	45	335.3	1901 Dec. 10
9.4	8.8	4.4	56.8	(1930)	(1904)		
277.4	328.4	139.9	1281.0	190	48	376.4	1901 Dec. 10
9.3	9.6	4.4	52.9	(1943)	(1904)		
233.2	273.6	135.1	1213.0	158	43	307.1	1943 Oct. 10
9.7	9.9	4.8	55.7	(1946)	(1904)		
181.9	202.9	77.5	1042.5	203	63	292.1	1882 Nov. 23
8.7	8.2	3.4	54.5	(1946)	(1927)		
135.9	156.2	70.1	878.0	157	55	167.6	1933 Dec. 16
7.2	6.4	3.2	46.4	(1930)	(1932)		
143.5	138.2	38.6	819.9	171	44	156.5	1930 Nov. 29
4.3	4.2	1.2	30.9	(1930)	(1947)		
237.4	277.8	114.5	1155.4	163	54		
9.2	9.2	4.3	53.1	(1946)	(1904)		

APPENDIX - 4

Frequency of Annual Rainfall in the district

(Data 1901-1950)

Range in mm.	*No. of years*
601-700	1
701-800	2
801-900	5
901-1000	5
1001-1100	11
1101-1200	6
1201-1300	4
1301-1400	6
1401-1500	3
1501-1600	2
1601-1700	2
1701-1800	2
1801-1900	1

APPENDIX - 5

Normals of Temperature and Relative Humidity

(Meenambakkam)

Month	*Mean Daily Maximum Temperature*	*Mean Daily Minimum Temperature*	*Highest Maximum ever recorded*		*Lowest Minimum ever recorded*		*Relative Humidity*	
							0830	*1730*
	°C	*°C*	*°C*	*Date*	*°C*	*Date*	*%*	*%*
January	28.8	20.3	32.6	1980 Jan 30	15.6	1946 Jan 09	83	67
February	30.6	21.1	36.2	1967 Feb 25	16.2	1960 Feb 03	80	63
March	32.7	23.1	40.6	1953 Mar 29	18.3	1954 Mar 04	77	64
April	34.9	26.0	42.2	1949 Apr 22	20.7	1968 Apr 27	72	68
May	37.6	27.8	44.3	1980 May 22	21.1	1952 May 21	63	66
June	37.3	27.6	43.3	1948 Jun 03	21.0	1961 Jun 22	58	59
July	35.2	26.3	40.1	1982 Jul 01	20.6	1985 Jul 14	65	61
August	34.5	25.8	39.0	1968 Aug 07	21.4	1967 Aug 16	69	64
September	33.9	25.4	38.6	1972 Sep 05	20.9	1959 Sep 07	73	69
October	31.8	24.4	37.4	1965 Oct 01	19.7	1980 Oct 24	81	76
November	29.2	22.5	34.4	1952 Nov 10	18.3	1954 Nov 08	83	76
December	28.2	21.0	31.7	1951 Dec 14	16.7	1949 Dec 31	84	71
Annual	32.9	24.3					74	67

* Hours I.S.T.

APPENDIX - 6

Mean Wind Speed in Km/hr.

(Meenambakkam)

Jan.	*Feb.*	*Mar.*	*Apr.*	*May.*	*Jun.*	*Jul.*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*Annual*
9.0	9.2	10.2	10.5	13.0	16.4	14.6	13.6	11.1	9.2	11.7	12.6	11.8

APPENDIX - 7

Special Weather Phenomena

(Meenambakkam)

*Mean No.of days with**	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May.*	*Jun.*	*Jul.*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*Annual*
Thunder	0.2	0.3	0.7	2.0	3.0	5.0	5.0	7.0	8.0	9.0	3.0	0.5	44.0
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	00.0
Dust-Storm	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Squall	0.1	0.0	0.3	0.6	1.2	1.0	3.0	1.5	1.2	1.5	0.6	0.1	11.0
Fog	0.8	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.4	3.0

* No. of days 2 and above are given in whole numbers

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2. For details, please refer to Chapter 10 - *General Administration*
3. For details, please refer to the Chapter 10 - *General Administration*
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CHAPTER - 2

HISTORY

Cradle of Civilization

The Chengalpattu-MGR District is considered as the cradle of the civilization of South India since the earliest pre-historic sites have been discovered in the district. 'Pallavaram', now a Municipal town in the district, has a significant place in the historiography (of the pre-history) of Tamil Nadu, as it was here for the first time in the History, Robert Bruce Foot, later known as the Father of the Indian Pre-historic Archaeology, discovered a pre-historic tool in the form of hand axe in the year 1863. This vital discovery was followed by one more by the same archaeologist in the next year. A more systematic and vigorous search led to the exploration of extensive palaeolithic sites in places like Orattur, Panjur, Sriperumpudur, Tirumullaivayil, Attirampakkam, Poondi and other places in the district and thus the district as a whole, gives the most numerous and important traces of palaeolithic man known in South India.

Pre-History - Palaeolithic Period

The district is important *par excellence* from the point of view of pre-history. It has been rightly called *the classic ground of early palaeolithic culture in South India* and the key-site for South Indian Palaeoliths. A number of implements belonging to Palaeolithic and or the old Stone Age have been found at Pallavaram along the Palar river and the Korattalaiyar river valley which may be cönsidered as the incunabula of our ancestors. These places attracted the eminent historians and archaeologists like William King, Burkitt, Richards, Cammiade, G.R. Graveley, Patterson, V.D. Krishnasamy, Zeuner, Banerjee and others who had made extensive researches about the pre-history of the places[1].

Palaeolithic implements found in the district were evidently made by clipping the boulders of quartzite situated in the laterite beds[2]. About the implements found at Pallavaram, attributed to the old Stone Age, Robert Bruce Foote remarked that they point out a deliberate choice of Caleurs and distinct progress in craftmanship. They show how humanity was flourishing in those portions of South India under conditions highly favourable to primitive life. The proximity of the rivers to the rocks highly suitable for the old weapons and implements no doubt, was helping man much to be the dreaded hunter of animal life[3]. Though these stone implements show considerable skill, they are not polished. Bruce Foote gives a long list of tools found in the district in his classic work, 'Indian Pre-historic and Proto-historic Antiquities', published in 1916. The type of imlements has been christened by him as *Madras Type.*

The main reason why such vast relics of the palaeolithic people are found in the district is that it is rich with quartzite-yielding rocks with which those ancient people could make implements to protect themselves from the animals. The relics of the palaeolithic people diminished considerably in the south of the Palar valley as the quartzite became rare. Such an important people, that they also go under the name "quartzite men". Archaeologists are of the opinion that the quartzite users are the most pre-historic men of India[4]. So, the "quartzite men" in the district are also the most pre-historic men.

The palaeolithic tools found in the district belong to hand axe tradition of Abbevillio-Acheulian stage. Since it is available in fairly large quantity in and around Madras, Oswald Menghin has applied the term, "Madras Industry". From the date of first discovery of a tool of this industry by Bruce Foote, innumerable sites have been discovered, yielding palaeolithic tools, in the district. Some of the important sites are Attirampakkam, Vadamadurai, Nambakkam, Erumaivettipalayam, Gudiyam, Manjakkaranai, Poondi, Gollapalayam, Gumipalayam, Kammavarpalayam, Narayanapuram, Kunjaram, Sitanjeri, Uthukottai, Paramandur, Sriperumpudur, Karanitanga, Sengundram, Bommaji, Konam, Kalanippakkam, Karigiri and other places.

Attirampakkam and Gudiyam, situated on the Korattalaiyar valley were excavated by the Archaeological Survey of India. A brief summary of the excavation is given in *Appendix-I.* The earliest palaeolithic tools like hand axes and cleaves found in this area belong to the lower palaeolithic industry. The tools of this industry were made out of pebble cores and are larger in size. This industry was followed by the middle palaeolithic industry. The tools of this phase were made from flakes detached from pebble cores. The tools were also smaller in size than the lower palaeolithic tools.

Nothing much is known about the period and habitat and culture of the ancient man in this period. However, it may be suggested that the early man lived in these regions sometime before 50,000 B.C. He was a nomad lived in cave when there was a need, otherwise he lived on the open terraces.

The Palaeolithic phase was soon followed by the Mesolithic phase. Attirampakkam in the Korattalaiyar valley have yielded the tools of this cultural phase. These tools are found above the palaeolithic tools. The tools are smaller in size. The neolithic cultural phase is also noticeable in some parts of the district. The characteristic tool, the celt or polished axe, have sporadically found at places like Madurantakam and Sriperumbudur taluks. However, no potential site yielding the typical neolithic pottery with associated material have been reported so far.

Megalithic Period

However, Chengalpattu has been a paradise for the Megalithic builders as evidenced by innumerable Megalithic burial sites all over the district. *(see Appendix-2)*. V.D. Krishnaswami, a well known archaeologist calls the district a megalithic province in itself'. The first systematic survey of these monuments was taken up by Archaeological Survey of India in 1944 which continued up to 1948. The monuments based on this survey can be typologically classified as Stone Circles, Dolmenoid Cist and Urn burials.

All these types, except the last, are invariably surrounded by the stone circles. While the dolmenoid cists have been found to cluster on the rocky high ground, the simpler cairn-circles have found to cling on the slopes or on the farther pene-plains. The field-data suggest the internment of urns, single or multiple in cairn-circles whereas legged terracotta coffins or Sarcophagus single or multiple are to be expected in dolmenoid cists of all types. The urns are usually large in size and pyriform in shape and have a pedunculated bottom.

The megalithic burial often generally contains grave goods comprising a variety of pottery, blackwares, red wares and black and red wares in various shapes, iron implements, such as swords, knives, horse-bites, daggers, arrow-heads, spearheads, sickles, etc., beads of carnelian and terracotta, ornaments of conch-shell, occasionally terracotta figurines and others and the cranial and skeletal remains[5].

In order to know the complete cultural assemblage of these burials, excavations were conducted between 1952 and 1960 at various Megalithic sites in Chengalpattu-MGR district, *viz.* Sanur, Amrithamangalam, Kunnathur and other sites[6]. A brief note on each excavation is as follows:

Sanur (Madurantakam taluk)

It is the most representative of the sites in Chengalpattu-MGR district, as it contains monuments of all the types enumerated above. Five megaliths were opened here in two seasons, during 1950 and 1952. Excavated megaliths can be categorised based on their surface-indications, comprised of two cairn-circles. One dolmenoid cist of rough unhewn boulders and two dolmenoid cist with capstone. But, during the actual excavations, some of them were found to be of the dolmenoid cist type and the fifth to be a case of pit burial. The excavations also revealed the process of construction of tombs and the burial contents. Three stages in the process of construction of these dolmenoid cists could be inferred from the gathered data. The dolmenoid cist chamber would be the first structure to go into shape, along with buttressing stones, if any, followed by the bounding circles of stones surrounding it. With the completion of the internment of grave-goods which would surely have been the next stage of burial-ritual and which is reasonable to conclude, would have introduced *via* the eastern passage, wherever it

existed, the passage would be blocked and the whole structure encased in a cairns of rubble and clay. Next to seal the burial, the capstone brought slowly over the inclined plane or ramp which the cairn provided, would be hoisted on the orthostats. Finally, a further covering of the same rubble-packing would be placed on the capstone also, the completely sealing off the burial from view.

In many cases, the cairn-packing over the capstones has fallen off owing partly to interference of agencies both natural and human. The entombed bones and skulls are examples of excarnated skeletal remains. The presence of two skulls in the megalithic burials indicates multiple burial and the fact that they lay together only leads to the inference that they were interred simultaneously. The cairn-fillings also contained fragments of crushed or broken posts, probably connected with ritual.

Amrithamangalam (Ponneri taluk)

An extensive urn-burial site, numbering upwards of two hundred and fifty, exposed and damaged, displays a large diversity in size and also vary in shape from the oval to the nearly globular form. Excavations were carried out here during the year 1955-56 and many urn-burials were tapped. The urns are all hand-made and are of coarse texture and thick granular fabric. All of them rolled rim, with or without additional decorations below and have either pedunculated bottom, which obviously pinned them into the earth sand helped to keep them in position or heeled solid bottoms, flat at the lower end. The urns are placed in an adequate pit cut into the lateritic gravel, and even wherever necessary, into the underlying lateritic bed-rook. In the process of internment the skeletal materials, consisting of disarticulated and excarnated bones like skulls, long bones loosened teeth, etc., were placed at the very bottom over the skeletal deposit were placed a few post in black or red wares besides black and a red ware. A few iron objects were also placed inside. The urns were then filled up with earth and covered with a dome-shaped lid, (a variant in the form of an oblong lids are also noticed). A few pots were also placed over the lid near its edge. The whole pit was there-after covered and sealed. A few blocks of laterite, appear to have been invaribly placed on the top of the pit, along its edge.

Kunnathur (Saidapet taluk)

It is an extensive megalithic habitation-*cum*-burial site. Excavations were carried out here since 1955 onwards and more than nine burials were tapped. Besides these, excavation was done in the habitation area also. The megalithic burials are of two types: Dolmenoid cist and pit burials. In both the cases the cairn circles are well marked. The cist was made up of four orthostats arranged in the swastika pattern. The sarcophagus made of terracotta was placed inside the pit and was sealed by a capstone.

In one of the burials, a sarcophagus having twenty one legs in three rows of seven each was encountered. Other one had eight legs in two rows of four each. In another instance, it has twelve legs in two rows, of six each. The sarcophagus was placed in the pit in east-west orientation, inside which were laid a few vessels of black and red ware, plain red ware, iron objects like flat celts, knives, dagger, spear-heads, etc. Most of the burials did not yield skeletal remains though a few did contain some remains. One pyriform urn was also excavated which consisted of a copper bowl, containing decomposed husk. In the case of the excavation in the habitation area at Kunnathur; a threefold cultural sequence has been brought to light. It was characterised by small pits cut into the bed-rock and containing complete pottery groups, which included the bowl, dish, ring-stand, etc., of the black and red ware and several pots of red-slipped ware. Some beads of quartz, glass and terracotta were also found. A brick wall, the size of brick being 11'x8x2½ inches, was also discovered.

The predominant pottery was a sturdy red ware, though the black and red were continued in use. Beads of glass, quartz, carnelian, some badly corroded copper coins and a few figurines and two seals of terracotta, one of them having an inscription in characters of circa eighth century were also found. Some of them could be dated to the medieval period. There was bricks with size 9x4½x13¼ inches exposed in this period. The megalithic culture phase coincided with the early historic period in Tamil Nadu. Many sites yielding the characteristic pottery, namely, black and red ware with iron implements have been discovered in different parts of the district. These sites may be dated broadly to the beginning centuries of the Christian era. The habitation area of Kunnathur was also excavated. These burials suggest some important aspects of megalithic phase. The habitation site situated near the megalithic burials as well as many other sites also provide some information on the culture of the megalithic people. The artefacts collected from the excavations from Kunnathur and Kancheepuram were useful to know the culture of the megalithic people.

Kancheepuram, famous urbanized centre right from the early historic times, was excavated in order to know the early history of the place. Excavations conducted in the premises of the Kamakoti maths, near Kamatchi Amman temple and in some parts of the city revealed two ancient cultural periods. The antiquity of Kancheepuram is thus taken back to the last phase of megalithic culture. From the upper half of these earlier deposits were obtained the sherds of rouletted ware and conical amphorae of numbering more than fifty placed in a row. Punch marked coin moulds, copper Satavahana coins, one of them bearing the name Rudra Satakarni of circa 2 Century A.D. were found in this level. Among the other notable finds mention may be made of terracotta figurines showing a cult goddess, a royal head, folded hands of a lady in rhythemic dance pose, sturdy and graceful bulls, etc.

This succeeding megalithic period coincides with the Pallava period (4-9 Century A.D.) as indicated by the relevant lead coins, the ceramics consisted of a bright red slipped ware. The period medieval in time range, was characterized by a thick dull red pottery and glass beads and bangles. These excavations show that the megalithic people used iron for their weapons. Their pottery mostly consisted of black and red wares. They stored water in shallow basins and developed the tank irrigation system. Many of the existing tanks in the district could have been created by the megalithic folks. Cultivation of crops and tending of animals ware their favourite occupation. Some groups in the society buried the dead and others cremated them. The ashes and bones collected after somtime were given a secondary ceremonial burial later.

Tondainadu

In the ancient geography of Tamil Nadu, the modern Chengalpattu-MGR district and its adjoining districts were included in the "Aruva" and "Aruva Vadathalai" Nadus. Later, this area was named Tondainadu, by adding the neighbouring territories. It roughly comprised the modern districts of Chengalpattu-MGR, North Arcot Ambedhkar, Tiruvannamalai Sambuvarayar, South Arcot (Tamilnadu) and Nellore in Andhra Pradesh. The ancient Tamil country may be likened to a magnificent column, and Tondaimandalam was its capital, the Kongu Chola mandalam, its shaft and Pandiyamandalam its base[7]. In another tradition, it was suggested that the whole of Tondainadu was inhabited by Aruvalar, a nomadic tribe who were also called Kurumbar[8]. P.T. Srinivasa Iyengar is of the opinion that the name Tondaimandalam came into being during the Pallava rule.

According to the 'Ancient History of Tondaimandalam', - one of the accounts in the Mackenzie collection, the region was occupied by the Kurumbas who are said to have been responsible for the creation of the 24 forts and the divisions of the region into 24 districts. They are also said to have carried on a sea trade with merchants of Kaveripattinam. It is from these Kurmbas that one Adondai Chakravarthi, said to be an illegitimate son of the contemporary Chola king, is described as having conquered the region and acquired it for the Cholas setting up his own rule at Kanchi after uprooting the Kurumbas. The region which was till then known as Kurumbabhumi is said to have been renamed Tondaimandalam after the name of the conquering Chola prince[9], Tondaiman Ilam-Tiraiyan.

Antiquity of Kancheepuram

One of the most ancient cities of southern India, which retains at the present day partly at least of its past greatness, is Kancheepuram in the Chengalputtu-MGR district[10]. Unlike Madurai, Uraiyur and Crangenore, the capitals of the Pandya, Chola and Chera sovereigns, the city which was once the capital of the Pallavas abounds in structural monuments of early

ages containing a very large number of lithic records from which it is possible to make out its history from the earliest times[11]. If any city of the southern India has a claim to antiquarian interest, Kancheepuram is pre-eminently one among them[12]. The city was called as Kachchipedu, Kachchi and Kanchi. Hieun Tsang calls this Kin-chi-pulo and states that it was the capital of Ta-lo-pi-cha *(i.e.)* - Dravida[13]. On writing about the city, Hieun Tsang states that the region had a rich and fertile soil, it abounded in fruits and flowers and yielded precious substances. The people were couragious, throughly trustworthy and public spirited and they esteemed great learning; in their written and spoken language they differed from *Mid-India*. There were more than 100 Buddhist Monastries with above 10,000 Brethren all of the Sthavira school.

The Jaina Temples were above 80 and the majority belonged to the Digambaras. This country had been frequently visited by the Buddha and the king Asoka erected *topes* at the various spots where the Buddha had preached and admitted members into his order. The capital was the birth place of Dharmapala, who was the eldest son of a high official of the city. Not far from the south of the capital was a large monastery which was rendezvous for the most eminent men of the country.

In Sanskrit, the town of Kancheepuram was known as *Kanchipuraka*. Patanjali, a Sanskrit Grammarian who lived about 200 BC mentions the word and even gives the etymological origin of the name *Kanchipuraka*.

Political History - Mauryas

The political history of the district may be said to have begun in the 3 Century B.C. with the inclusion of Kancheepuram within the Mauryan Empire, built by Chandragupta Maurya which was in its hey-days during Ashoka the Great, the first emperor who may be said to have unified India. On the possibility of Maurya's supremacy over Tondaimandalam, K.A. Nilakanda Sastri writes, *How much farther south the empire of the Mauryas extended can only be conjectured; it seems* ***not unlikely*** *that a part of the* ***Tondaimandalam*** *was included in it; at any rate, a pallava inscription of the 9th century A.D. (The Velurpalayam plates) mentions one Asoka Varman among the earliest rulers of Kancheepuram*[14].

Rock Edict XIII of Asoka mentions 'Pulindas' among other people. It is said that Pulindas were not confined to one single district but are mentioned as occupying various separate provinces. R. Sathianathaier equates the Pulindas with the Kurmbas and says that the people conquered by the Mauryas in Tondaimandalam were the Pulindas or Kurumbas[15]. While discussing the Mauryan conqueror of Tondaimandalam, R. Sathianathaier writes that the evidence in favour of Bindusara is overwhelming[16]. After Asoka, the countries conquered by the Mauryas asserted independence and Tondaimandalam might have followed suit[17].

Satavahanas (230 BC to 2 C. AD)

In the Deccan, the Maurya empire was follwed by the rule of the Satavahanas[18]. Their rule in Tondaimandalam was evidenced by the availability of ship-coins of Pulumayi-II in the region between Pennar and Palar, in profusion. R. Gopalan is of the view that the Satavahanas continued to rule Tondaimandalam up to the rise of Karikala Chola who conquered the area from them[19].

Karikala (C.AD.190)

The history of the early Cholas (Sangam Cholas) has been written mainly with the help of the ancient Tamil literature *(i.e.)* Sangam works. From very early times, Karikala, the greatest of the Sangam Cholas, became the centre of many myths which in modern times, have often been accepted as serious history[20]. Conquest of Kanchi by Karikala is one of the elements in the Karikala legends that can find no support from the earliest authorities on his reign. But *Pattinappalai* of Kadiyalur Uruthiran Kannanar, a sangam work which sings the glory of Karikala, refers to a kind of people *Aruvalar* who carried out Karikala's behest. The Aruvalar were the people who inhabited in the Aruvanadu which was later called as Tondainadu[21]. Karikala Chola's conquest must have contributed to the prosperity of Tondainadu though the pioneer work of acculturation of this region was done by Asoka and his Buddhist Missionaries[22].

On the Karikala's conquest of Tondaimandalam, R. Gopalan writes, *During the reign of Karikala who has been assigned with the acceptable authority by several scholars to the age of the Tamil Sangam in the beginning of the Christian era, kancheepuram appears to have been one of the northern outposts of the kingdom. At any rate, it is probable that one of Karikala's exploits, or those of his generals, must have been the transfer of power from Andhra Satavahanas whose ascendancy in this region is indicated by discovery of ship-coins in profusion in the region between Pennar and Palar, into the hands of the Cholas*[23].

It would seem that Tondainadu was ruled by Tondaiman Ilamtiriyan in the days of Karikala as the Chola Chieftain. P.T. Srinivasa Ayyangar suggested that Ilamtiriyan was a grandson of Karikala. According to *Manimekalai*, one of the two Tamil epics, he was born to a Naga princess Peelivalai, and was sent by a ship to the Chola country, wrapped in the Tondai creeper and became the ruler of territory which subsequently was called Tondainadu, as he wore creeper[24].

But, K.A. Nilakantasatri does not agree to this and mentions that there is no satisfactory evidence in support of the suggestion that has been made that this Chieftain was the grandson of Karikala or atleast a viceroy appointed by him after his conquest of Kanchi[25].

The history of Tondainadu is lost in obscurity almost from the days of karikala to its occupation by the Pallava kings under Sivaskanda Varman. It is probable that during that period, it was in the hands of the Cholas[26].

Senganan

One of the most important successors of Karikala was Senganan. Historians firmly believe that his sway must have extended throughout Tondaimandalam[27].

Kalabhras Interregnum

Identification of the Kalabhras is still a matter of controversy. However, it cannot be disputed that they ruled certain pockets of Tamil Nadu, following the Age of Sangam. A division of Kalabhras entered Tondainadu and marched along the Palar basin. Their domination over Tondainadu was ended by Sivaskanda Varman temporarily by about the middle of the 3 Century AD[28]. The Kalabhra occupation of Tondainadu does not appear to have been as decisive and complete as it was in Pandinadu and in Cholanadu. There had been frequent skirmishes between the Pallavas and the Kalabhras in and around Kancheepuram. Finally, Pallava Simhavishnu put an end to the Kalabhra interregnum in Tondainadu in the latter half of the 6 Century.

The Pallavas

By 250 AD, Tondainadu became the hegemony of the Pallavas, one of the major ruling dynasties of ancient Tamil Nadu, and remained as the Pallava country up to 900 A.D.

Eminent and erudite scholars like Dr. Fleet, Jouveau Dubriel, Dr. S.Krishnaswamy Aiyangar, T.A. Gopinatha Rao, K.V. Subramaniya Aiyar, Rangaswamy Saraswathy, P.T. Srinivasa Iyengar, R. Gopalan, Father Heras, Fergusson, Dinesh Chandra Sircar, Dr. C.Minakshi, K.A. Nilakanda Sastri, Dr. M. Rajamanickanar, Dr. T.V. Mahalingam, Dr. K.V. Raman and others have made extensive researches on the history of the Pallavas.

Form the beginning of the Third Century A.D., to the closing years of ninth, except for the interval of some decades when the whole of South India experienced a dark period under the spell of the Kalabhras, about whom has been discussed in a previous page, Tondainadu was under the aegis of the Pallavas.

The Pallava rule has been divided into four phases:-

1. The period of the Pallavas of Prakrit charters;
2. The period of Pallavas of Sanskrit charters;
3. Pallavas of Simha Vishnu line; and,
4. Pallavas of Nandivarma-II Pallavamalla line.

Early Pallavas of the Prakrit records (250-340 AD)

Source materials for the study of the early history of the Pallavas are not adequate. Historians depend entirely upon the fewer copper plate charters in Prakrit and Sanskrit for the political history of the Pallava Kings.

It is not apparent who was the first member of the Pallavas who established the Pallava power in Tondainadu. Various theories on the origin of the Pallavas have been put forth by eminent scholars like R. Gopalan[29]. The origin of the Pallavas is still as obscure as ever.

Bappadeva

Bappadeva who figures in the first Prakrit charters (Hirahadagalli plates found in Hirahadagalli in Bellary district) of the Pallavas and who is considered by many historians as the first Pallava to rule from Kanchi, appears to have been the Governor of large tracts in the south under last Satavahana ruler Pulumayi-III. Dr. C. Minakshi doubts whether Bappavadeva was the name of the King at all[30]. Bappadeva is said to have taken up the work of destroying jungles and convert them into arable lands.

It may be presumed that during this age, the Pallava Kingdom was divided into two parts, the northern part comprising the Telugu districts with Amaravathi as capital and the Tamil districts around Kancheepuram with Kancheepuram for its capital. Thus, the region bounded by Palar on the south and the Krishna on the north formed the kingdom of Pallavas during this period[31].

Sivaskandavarman (250-275 AD)

Sivaskandavarman succeeded Bappadeva to the Pallava throne. It is learnt from the Hirahadagalli grant dated in the eighth year of his reign that Sivaskandavarmen had the title of Dharmamaharaja in recognition of his extensive conquests. Sivaskandavarman is said to have performed the *Aswametha, Vajapeya* and *Agnishtoma* Yagas. His sway extended as far as the south Pennar, while in the north his kingdom included the Telugu districts. It is also inferred that inland and foreign trade of the Pallava country was in a flourishing state.

Vijayaskandavarman

It is presumed that Vijayaskandavarman succeeded Sivaskanda varman by 280 AD[32]. The relationship between Sivaskandavarman and Vijayaskandavarman is not known[33]. Very little is known about him. The study of the Prakrit charters of the Pallavas led the historians to say that kings who succeeded Vijayaskanda Varman were Buddhavarman and Budhyankuran. The next member of the Pallava dynasty is Vishnugopa, well known as the Pallava contemporary of Samudragupta, the Gupta Emperor, who according to the Allahabad pillar Inscription had invaded south India, came as far as Kancheepuram and conquered Vishnugopa. He is not metioned in any of the charter of the Pallavas.

Early Pallavas of the Sanskrit charters (350 - 550 AD)

The period between 340 AD to 550 AD is commonly spoken of as the age of the Pallava kings of the Sanskrit charters, as the records of this period are invariably in Sanskrit and not in Prakrit as hitherto. The importance of the reign of Vishnugopa lies in the fact that it marked the period of transition from the rule of the Pallavas of Prakrit charters to that of the Pallavas of the Sanskrit charters.

Numerous names of Pallava kings are known for this period. However, we could not understand their political exploits[34]. K.A.N. Nilakanta Sastri is of the opinion that the history of the Pallavas from 350-500 AD is almost a blank[35].

However, K.A.N. Sastri has arrived at a Pallava genealogy of the Sanskrit charters as follows[36]:-

Kumaravishnu-I (350-70 AD)
Skandavarman (370-85 AD)
Viravarman (385-400 AD)
Skandavarman-II (400-36 AD)

- Simhavarman-I (436-60 AD)
  - Skandavarman-III (460-80 AD)
    - Nandivarman (480-510 AD)
    - Kumaravishnu-II (510-30 AD)
      - Buddhavarman (530-40 AD)
        - Kumaravishnu (540-50 AD)
- Yuvamaharaja Vishnugopavarman-I
  - Simhavarman-II
    - Vishnugopavarman-II

Though the order of the succession of the Pallavas of the Sanskrit charter could not be made out, it becomes clear that kings mentioned in the charters had ruled Tondainadu. The contemporary royal dynasties of the Pallavas of the neighbouring kingdoms were the Kadambas, the Vakatakas, the Salankayanas, the Western Gangas and the Vishnundins.

The Pallavas of Simhavishnu Line

An eventful epoch in the history of the Chengalpattu-MGR district is the emergence of a new line of the Pallavas under Simhavishnu, son of Simhavarman. The rulers followed by Simhavishnu made great contributions to the development of social and economic condition. In another aspect also, this period of Pallava history is a special importance in South Indian History.

It was during this period that a beginning is believed to have been made in the Tamil land to build temples and other monuments in stone instead of perishable material such as wood and brick. Music and dance was also developed during this period. Above all, there was a cultural, religious and literary development during this period, as Nayanmars, Alwars, and other litereteurs flourished during this period[37].

Simhavishnu (575 to 600 AD)

Simhavishnu, also known as the Lion of the Earth, is considered to be the virtual founder of the Pallavas[38]. He suppressed the Kalabhras in the northern part of Tamil Nadu and also conquered the whole country up to the river Kaveri. He established Brahmadeya villages and patronised Brahmanas. The village *'Manali'* in Saidapet taluk seems to have been created as a Brahmadeya referred to since it bore the name Simhavishnu Chathurvedi mangalam[39]. *Manali* was known by that name, (*i.e.*), Simhavishnu Chathurveti mangalam, even as late as the days of Rajaraja-III[40].

Mahendravarman (c. 590 to 630 A.D.)

Mahendravarman succeeded his father Simhavishnu to the Pallava throne. He was known by a number of surnames such as Mahendra Vikrama, Mattavilasa, Chetakari, Vicitrachitta, Gunabhara, Purushottama, Aluptakama, Satya Sandha, Avanibhajana, Lalitankura, Satrumalla, Pravritramatran, etc., in Sanskrit, Nilvilonayambu, Parasombu, Ventulavittu, etc., in Telugu and Chitrakarappuli and Pagapidugu in Tamil.

When Mahendravarman came to power, the other equally formidable dynasties ruling in other parts of South India were the Pandyas and the Chalukyas. The long drawn-conflict for the supremacy over the major part of Tamil Nadu, among the three powers started during the reign of Mahendravarman which was destined to be continued by his successors for over a century and a half. Though Mahendravarman was successful in keeping Tiruchirappalli, as the southern frontier of his empire, the northern frontier of the Pallava kingdom hitherto extended up to the river Krishna was pushed to the south of the river by the incursion of the Chalukyas. The greatest foes of the Pallavas.

Pulakesin-II, the Chalukya ruler sought to measure his strength against Mahendravarman-I whose growing power rivalled his own. He led his invasion far into the Pallava domain and penetrated unstopped up to Pullalur, about 25km. north of the Pallava capital. This was the scene of two other battles between the English and the French in the British period. There, a pitched battle was fought and although Mahendravarman was able to save his capital, he lost the northern province to his enemy[41]. The causes for the opening of the Pallava-Chalukya conflict is said to be buried in obscurity[42]. Tradition has it that Mahendravarman was a Jain by Religion and according to

Periyapuranam, Appar, also known as Thirunavukkarasar, one of the 63 Nayanmars (disciples of Siva) had converted the King to Saivism by virtue of his divinity.

The history of the rock cut architecture probably started with Mahendra Varman in Tamil Nadu, who carved the first temple to "Brahma, Iswara and Vishnu without the use of bricks, timber, metal and mortar" according to his inscription found in Mandagappattu. In other words, the monolithic rock-cut, temples of Mahendravarman in Vallam (Chengalpattu-MGR district) Mahendravadi (North Arcot Ambedhkar district) Pallavaram (Chengalpattu-MGR district) etc., suggest that he may be called the founder of the Hindu Architecture in South India[43]. Mahendravarman was also a poet who had authored a Sanskrit drama, "Mattavilasa Prahasana".

Narasimhavarman (630-668 AD)

Mahendravarman-I was succeeded by his son Narasimhavarman-I as the Pallava ruler. He is one of the celebrated kings of the dynasty. When Narasimhavarman-I became the king, he was looking for a chance to take revange upon the Chalukya King Pulakesin-II, who had invaded Pallava country and penetrated as far as Pullalur during his father's rule. The opportunity came when Pulakesin-II, who, with the glorious memory of his victory at Pullalur, led his army once again to counter Narasimhavarman-I. But, this time victory smiled at Narasimhavarman who defeated Pulakesin-II in several battles including the one at Manimangalam, which is situated at 32 km. east of Kancheepuram and still called by the same name[44]. Narasimhavarman is also regarded as a good friend as he had helped Manavarman, the Ceylonese king who took asylum under this Pallava losing his throne to his rival, by sending his army to restore him, his lost throne.

But Narasimhavarman-I did not stop with this. Encouraged by his success at Manimangalam and other places, he led his huge army towards the capital of the Chalukyas, *i.e.* Badami (or Vatabi). In the ensuring fierce battle, Pulakesin-II might have fallen fighting and Narasimhavarman-I destroyed the capital and put into flames. He took the title *'Vatapikondan'* (conqueror of Vatapi)[45]. In his invasion against the Chalukyas, Narasimhavarman-I was ably assisted by his brave General Paranjothi, who later became one of the 63 Nayanmars (disciples) of Siva, and called as Siruthonder. Periyapuranam, a Tamil work of poet Sekkizhar, who was also a minister of the then Chola ruler, which describes the hagiographies of Nayanmars, refers to this historical episode[46]. Narasimhavarman-I is said to have vanquished the Cholas, Cheras and the Kalabhras as well as the Pandyas but no details of these battles are forthcoming[47].

Though the army succeeded in the task, the success did not last long and Manavarman pleaded for help once again. Now, the Pallava king sent a big army and accompanied it up to Mamallapuram port. The army chased away the rival of Manavarman and re-instated him.

Another important event that took place during the reign (about 642 AD) of Narasimha Varman-I, was the visit of Hieun-Tsang, the Chinese Buddhist scholar and pilgrim to the Pallava court. His travelogue is one of the vital foreign accounts to know the political, social and religious conditions of the then South India. He described the country, around Kancheepuram as 'Dravida' and spreading over 6000 li * in extent. The soil was fertile and it produced good yield. He found the climate of the region tropical and the character of the people courageous. He estimated that the people lived with the principles of truth and held learning and the learners, in high veneration. He also noted down the condition of Buddhism in South India.

Narasimhavarman developed the port of Mahabalipuram on the east coast and named it Mamallapuram after one of his surnames, 'Mahamalla' (great pugilist). Contemporary literature also corroborates that Mahabalipuram was a flourishing port city then. Thirumangai Alwar, one of the Vaishnavite saint sung in praise of the port as it was often seen harbouring vessels, laden with precious gems, elephants, etc. It was also from this port, Narasimhavarman launched two invasion against Ceylon[48].

He is equally well-known for his contribution to art and architecture since many monolithic of Mahabalipuram have been carved out during his tenure. R. Nagasamy suggests that the entire Mahabalipuram monolithic monuments to a period later than Narasimhavarman-I[49]. However, there are other views. K.R. Srinivasan suggests that the cave temples initiated by Mamalla were completed in stages by his immediate successors for two generations, who have also created a few moments in the same style and at the same place[50].

In short, Narasimhavarman-I raised the Pallava power to a glory, unprecedented in the annals of the Pallavas.

Mahendravarman-II (668-669. AD)

Mahendravarman-II succeeded Narasimhavarman about whom much is not known. His reign was short and peaceful, and free from disturbances. However, it is stated that he was killed in a military campaign[51].

Parameswaravarman-I (669-690 AD)

Parameswaravarman-I who came to the throne in 669 ruled for 19 years, *(i.e.)* up to 690 AD[52]. During the early part of his reign, he had to wage wars against the Chalukyas, the Gangas in the north and the Pandyas in the south. The Pallava-Chalukya conflict resume during his reign when his Chalukya contemporary, Vikramaditya-I turned to the task of avenging the fate of his father Pulakesin-II, at the hands of Narasimhavarman-I. Vikramaditya-I advanced to the neighbourhood of the Pallava capital which compelled Parameswaravarman to seek refuge in flight. Vikramaditya-I

* li - A chinese unit of measurement of area.

pursued him to the banks, of the river Kaveri and encamped at Uraiyur where he had probably effected a junction with his ally, the Pandya King. In exile, Parameswaravarman mustered a large army and fought with Buvikrama, the Ganga ally of Vikramaditya-I. This battle went against him and he lost his enemy a valued crown jewel and the royal necklace which contained the gem 'Ugrodaya'. An infuriated, Parameswaravarman sent counter-expedition into the Chalukya kingdom in order to divert the attention of the enemy. He then met the invading forces in a battle at Peruvalanallur,north-west of Uraiyur and inflicted a decisive defeat on them, The expeditionary force returned with much booty after encounters with Vinayaditya and Vijayaditya, the son and grandson respectively of Vikramaditya who had to leave Pallava territory and retire to his own kingdom.

Parameswaravarman was a devout Saivite. Gnanasambandar, one of the Saivite Saints was believed to be his contemporary. His reign witnessed intense religious activities in the south and the *Bhakthi Movement* made remarkable progress.

Narasimhavarman-II (Rajasimha)-(690-729 AD)

About 690-91 AD, Parameswaravarman-I was succeeded to the Pallava throne by Narasimhavarman-II surnamed Rajasimha. His long reign of 40 years was one of comparative peace and it witnessed remarkable achievements in the fields of temple building, religion and literature.

He encouraged the Sanskrit language. Most of his inscriptions are in Sanskrit. He patronised Sanskrit poets and scholars. Dandin, the author of *Kavyadarsa* is believed to have spent some years in his Court. Rajasimha's inscriptions reveal that he revived and developed *Ghatika** at Kancheepuram.

Rajasimha constructed a structural temple to Siva called the Kailasanatha temple. This temple called 'Rajasimheswara' named after the king's own name, contains numerous smaller shrines constructed, including those by Rajasimha's queen Rangapataka and his son Mahendravarman. The construction of shore temple at Mamallapuram is also attributed to him.

He has assumed many surnames such as, Aparajita, Atriranachanda, Parthavikrama, Chitrakarmuka and Sagramarama. He also assumed a title Kalakala which according to historians, is a veiled reference to his victory over the Kalabhras.

Rajasimha was a staunch Saivite. He was tolerent towards other religious sects also. He is believed by certain scholars to have built the Vaikunthaperumal temple at Kancheepuram. The seated royal figure in the Adivaraha cave temple in Mamallapuram has been identified by some scholars with Rajasimha's.

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* For details, please see Chapter-15 - *Education*.

The Architectural Beauty of Kailasanathar Temple, Kancheepuram.

This Pallava King was at the pinnacle of his political power by about 720 AD. According to a Chinese source, Rajasimha sent an embassy to China expressing his willingness to place his war elephants and his cavalry at the disposal of the China emperor, who was then fighting against the Arabs and Tibetians. Responding to the request of the Chinese emperor, Rajasimha built a Buddhist Vihar at Nagappattinam for the use of the Buddhists who visited the place for commercial purposes[53].

Parameswaravarman-II (729-731 AD)

After Rajasimha, his son Parameswaravarman-II became the ruler of Tondaimandalam. His rule was only for a very short span. Soon after his ascendancy, his capital was attacked by the Chalukya crown prince Vikramaditya-V, assisted by the Ganga prince Ereyappa, son of Sripurusha. Parameswaravarman-II had to purchase peace at a heavy price. His attempt at retaliation against Sripurusha ended in disaster. He was killed in the battle at Vilande by the Ganga ruler who seized the royal Pallava umbrella together with the title *Permanadi*[54].

Nandivarman-II (731-795 AD)

According to the inscriptions in Vaikunthaperumal temple at Kancheepuram, the Pallava Kingdom got into confusion and anarchy prevailed, following the death of Parameswaravarman-II since he had no issue to succeed. The ministers, members of *Ghatika** and other offices installed Nandivarman-II, son of Hiranyavarman, aged 12 years on the throne.

Nandivarman-II's accession was opposed by the members of the regular line of the Pallavas who were related to Parameswaravarman-II. The first 20 years of Nandivarman-II otherwise known as Nandivarma Pallavamalla is presumed to have been spent in a prolonged struggle with the opposing elements.

They were apparently two princes belonging to the direct line of the Pallavas who objected to the Nandivarma's accession. One of them is said to have lost his life opposing Nandivarman's entry into Kanchi, while another, Chitramaya as seen from other inscriptions gained some support not only with the kingdom, but of the Pandya ruler as well.

Pandya ruler Maravarman Rajasimha-I and the Chalukya monarch Vikramaditya-II, the contemporaries of Nandivarman-II, espoused the cause of Chitramaya, the rival contestant to the Pallava throne, inflicted a number of defeats on Nandivarman Pallavamalla and besieged Nandigramam, a village near Kumbakonam. Udayachandra the Pallava General became the hero of the scene as he had lifted the siege, killed Chitramaya and made the Pallava throne free from contest. The able and brave general also dealt with other enemies of Nandivarman Pallavamalla like the Sabara King Udayana and the Nishada Chieftain Prithivi Viyagraha who were probably acting in

collusion with the Chalukya Vikramaditya-II. The invasion of Vikramaditya (about 735 AD) in which his Ganga feudatory Sripurusha also co-operated, was indeed the greatest danger that threatened the kingdom of the Nandivarman Pallavamalla in the early years of his long reign. But Vikramaditya behaved on the whole very considerably, though he defeated Nandivarman and occupied his capital for a time, he did no damage to the city, pleased the people by his liberal gifts and returned to the Kailasanatha and all other temples the heaps of gold that belonged to them. K.A.N. Sastri is of the opinion that we have no means now of determining the exact relative chronology of the events in these early wars of Pallavamalla with his enemies on the north and south[55]. Towards the end of his reign, Vikramaditya sent out another expedition against the Pallava, under his son Kirtivarman, who carried out a successful raid and returned to his capital with many elelphants and much gold and jewellery captured from the enemy.

Another political contemporary of Nandivarma Pallavamalla were the Rashtrakutas who were rising to prominence then under Dandidurga. It is said that he invaded Kanchipuarm and after a demonstration of force, struck up an alliance with Nandivarama Pallavamalla and the alliance was further cemented as the Pallava King married Rena Devi, daughter Dandidurga.

Nandivarman having consolidated his position, led an expedition against the Ganga Kingdom, defeated Sripurusha and forced him to surrender much wealth and restore the necklace containing the precious gem "Ugrodaya", which was lost to Ganga Buvikrama by Parameswaravarman-I, one of the Nandivarmapallava's predecessors.

The Pallava-Pandya conflict also revived later and a battle between Nandivarma Pallavamalla and Jatila Parantaka Nedumchadaiyan *alias* Varaguna Maharaja-I (765-815 AD) took place on the banks of Kaveri river by about 767-AD. Nandivarma Pallavamalla formed a confederacy consisting of the rulers of Kongu, Kerala as well as Tagadur against the Pandya ruler, but the Pandya ruler overcame the confederacy and Nandivarma's attempt to chalk out the Pandya power did not succeed.

Nandivarman Pallavamalla continued to rule till 795 AD. He was a worshipper of Vishnu and a great patron of learning. He renovated old temples and built several new ones including the Vaikunda Perumal temple, at Kanchipuram. Tirumangai Alwar, one of the 12 great Alwars of Vaishnavism was his contemporary.

Dandivarman (796-845 AD)

Nandivarman was succeeded by his son, Dandivarman. During his time, the Pandyas pushed their northern frontier further north at the cost of the southern frontier of the Pallavas. Dandivarman also had to face the hostility of Rashtrakutas. Within a few years of his accession, about 804-5 he was defeated by Govinda-III, the Rashtrakuta King. During the earlier

years of his reign, the Pallava country was subordinataed by the Rashtrakutas. In the second half of the Dandivarman's reign for about 26 years, no inscriptions have been found throughout his kingdom.

Dandivarman improved the irrigation sources of the country by excavating lakes and de-silting the existing ones.

Nandivarman-III (846-69)

Dandivarman was followed by his son Nandivarman-III, a much abler Monarch than his father. In the last years of his father's reign, he organised a strong confederacy against his aggressive Pandya contemporary - Srimara Sri-vallabha and his father-in-law Srikantha and inflicted a severe defeat on them at Tellaru (near Wandhavasi). His allies were the Gangas, the Tamil Cholas and even the Rashtrakautas. Tellaru battle is one of the important turning points in the South Indian history. The victory at Tellaru fetched the title "Tellarerinda" (தெள்ளாறெறிந்த) - the conqueror at Tellaru - to Nandivarman-III.

Another result of the battle was that the Pandyas were driven back up to the river Vaigai. But later by 859 AD, the Pandya Srimara Srivallabha mustered his strength, invaded against the Pallava forces and defeated Nandivaraman and his confederates near Kumbakonam.

Nandivarman-III was undoubtedly too great a monarch to suffer by this defeat[56]. He succeeded in his attempt to regain the former political glory of the Pallavas. He patronised art and literature-liberally. "Nandikalam bagam", a Tamil poem portraying Nandivarman-III as its protagonist, describes the victories of the king in his various battles. He is also said to have maintained a powerful fleet and inscriptional evidences are there to believe that he had overseas connection with Siam.

His royal consort Sankha, was a Rashtrakuta princess. His son through Sankha was Nirupatunga who succeeded him on the Pallava throne.

Nripatunga (869-900)

Nripatunga became the Yuvaraja in 860 AD even during his father's rule. Aparajitha and Kampavarman were his two brothers. Nripatunga's first target on his accession was to take revenge upon the Pandyas who had defeated his father at Kumbakonam, which he achieved at the battle of Arsalaru near Karaikal. The Pandyas had to meet a Ceylonese invasion at the same time or immediately following the Arasalar* battle and they were subdued in that battle too. The then Pandya ruler Varaguna-II accepted the suzerainty of Nripatunga.

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* Arisilar - a branch of the river Cauvery which enters the sea at Karaikal

Transition of Tondaimandalam from the Pallavas to the Cholas

Aparajitha, a step brother of Nripatunga had an eye on the Pallava throne and hence, differences arose between the brothers. Both looked for allies. Nripatunga had the support of the Pandyas while Aparajitha won over the Ganga Prithivipati-I and most probably also Aditya-I,-a prince of the rising Chola empire. The result was the historic Sripurambiyam battle (near Kumbakonam) in 885 AD where the rival armies met. In the decisive battle fought, Ganga Prithivipathi lost his life, but, after winning the battle for Aparajitha. Thus came the end of Nripatunga's rule and beginning of Aparajitha's, which too was a short lived one. Aditya-I, the Chola Prince participated in the Sripurambiyam battle as Aparajitha's ally and on victory, Cholas became a subordinate power to the Pallavas much to the dislike of Aditya-I, He planned and carried out the over-throw of the effete power of his suzerain. He invaded Tondaimandalam and in a battle ensued, he pounced upon Aparajitha when he was mounted on an elephant and slew him[57]. That was the end of the Pallava Kingdom now became Chola territory. Nripatunga died in 899 AD and his another step brother Kambavarman led an obscure life as a chieftain in the western part of Pallava territory.

Contribution of the Pallavas to the Chengalpattu - MGR district

In the district histories of Tamil Nadu, one of the four districts to have its headquarters in a town which had been the capital of one of the ancient major ruling dynasties of South India, is Chengalpattu-MGR district, the others being the districts of Thanjavur, Tiruchirappalli and Madurai. Since the district was positioned at the core of the Pallava Kingdom, the history of the Pallavas and their contemporaries is the history of the district.

Though Kancheepuram has been regarded as one of the holiest and most important cities even before the Pallavas, their rule added further glory to the town as they embellished the city with gigantic temples and shrines. The district owes its gratitude to the ruling dynasty for their beautification of Mahabalipuram with the internationally acclaimed piece of art and architecture. Perhaps, the Pallavas, interest in improving the irrigation sources by excavating many tanks and lakes might have earned the sobriquet of *"the district of lakes"* to the district. Literature and religion received fair patronage which promoted the religious and cultural life of the people. Many Alwars and Nayanmars lived during Pallava regime who were extended royal patronage in propagating their ideals and morals. The royal emblem of the Pallavas was *'Nandi (Bull)'*.

Chengalpattu-MGR district under the Later Cholas

K.A.N. Nilakanda Sastri's *The Cholas*[58], is the first systematic study of the history of the Cholas whose period is regarded as the most creative period of South Indian history, as the whole of South India was brought under the sway of a single government and a serious attempt was made

Five Rathas, Mahabalipuram

Arjuna's penance ... largest sculptural canvas in Mamallapuram

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during their rule to face and solve the problems of public administration arising from the new conditions. In local government, in art, religion and letters, the Tamil country reached heights of excellence never reached again in succeeding ages; in all these spheres, as in foreign trade and maritime activity, the Chola period marked the culmination of movements that began in an earlier, age, under the Pallavas[59].

The history of the Chola rule in the Chengalpattu-MGR district has been culled out from K.A.N. Sastri's monumental contributions to the history of South India and other equally authoritative and authentic historical works published up to this time including the latest historical and archaeological researches and discoveries.

In the war of supremacy, followed by the downfall of the Pallavas, among the Cholas, Pandyas, Chalukyas and Rashtrakutars, the Cholas emerged victorious and their supremacy continued for about four centuries to come.

Aditya-I (871-907 AD)

The inscriptions of Aditya-I have been found in Thirukalikundram, Tiruvidanthai, Kancheepuram and other places of the district. But the north and north eastern part of the district especially Thiruvothiyur temple which bears numerous inscriptions of the later Pallavas like Aparajitha, does not possess any inscription of Aditya-I. However, Aditya calls himself as *Tondainadu Paravina Cholan*, meaning the conqueror of the Tondainadu. He died at Tondaimanadu in Chittoor district. Therefore the conquest of Tondaimandalam was completed in the time of Aditya-I.

Parantaka-I (907 - 953 A.D.)

Many of the inscriptions of Parantaka-I, have been found in Thiruvothiyur. Some of them refer to him as Maduraikonda Parakesari. An inscription from Velacherry near Guindy belongs to Parantaka-I. The Thiruvothiyur inscriptions of Parantaka-I also speak about Parantaka's expedition beyond Tondainadu. Two of the Thiruvotiyur epigraphs record the gift made to the temple of the town, by one Maran Parameswara Varman *alias* Sembiyan Soliyarayan of Sirukalattur in Cholanadu, who captured Sitpulinadu, and destroyed Nellore. The Sitpulinadu was in the southern region of the Eastern Chalukya kingdom[60], We have also a record of Parantaka of his 29th year which throws some light on the Chera - Chola relations during that time[61]. It relates to the gift made to the Thiruvothiyur temple by Iravi Nili, daughter of Vijayaragava Deva, the Kerala Raja, who is identified with the son (or brother) and successor of the Chera King, Sthanuravi. This gift of Chera princess to a temple situated so far away as Thiruvothiyur in the Chola dominion, corroborates the friendly relations that existed between the Cheras and the Cholas in Parantaka's time[62]. There are many other inscriptions of Parantaka in Thiruvothiyur which reveal the association of the Chola ruler

with this place in the district. Parantaka had a title, *Surasulamani* and one of the inscriptions in the Thiruvothiyur temple speaks of a street as *Surasulamani perumtheru*,-perhaps named after the title of Parantaka-I. An epigraph of Parthivendravarman from Padi gives us an interesting information that Korattur situated in Saidapet taluk was called Parantaka Chaturvedi mangalam, evidently after Parantaka-I. His inscriptions in Uttiramerur speaks well of how democratic and autonomous were the village administration under the Cholas. (For details, please *see* chapter on "Local Self Government").

The Rashtrakuta Interregnum

The closing years of Parantaka rule witnessed a set back caused by the combined forces of the Rashtrakutas and the Gangas. Though the Ganga ruler Prithivipathi-II accepted the Overlordship of the Cholas, his successors, Butuga-II and Krishna-III invaded Tondaimandalam and defeated the Chola forces decisively, at Takkolam (near Arakkonam) in 949 AD[63].

The occupation of Tondaimandalam by the Rashtrakuta becomes clear as there are about four inscriptions in the Thiruvothiyur temple belonging to Krishna-III (AD 939 - 966)[64]. The dates of these inscription range between 18 and 22 years of his reign. One of the epigraphs bears an interesting information that a merchant of Manyakheta (Rashtrakuta's capital), called Narasinnayyan who was in the camp of the Rashtrakuta King, Krishna-III, made a gift of gold to the Thiruvothiyur temple and deposited the same with resident of Serrupedu (Modern Chetput) in Indramuniyar Nadu. Another inscription records the gift to the same temple made by the Rashtrakuta King's mother, Pulaichirani. Dr. K.V. Raman observes that these two instances show that even peace loving people accompanied the Rashtrakuta army of Invasion in Tondaimandalam and thereby introduced Canarese people in this region[65]. Krishna-III's inscriptions have been found in Uttiramerur also. yet another important record from Thiruvothiyur which is partly written in Tamil and partly in Grantha, graphically describes how Rajaditya, the son of Chola, Parantaka-I, was killed while fighting on the battle field of Takkolam and how his royal guru, Vallabha, became grief-stricken at his disciple's death, came to Thiruvothiyur temple and settled down there for the rest of his left, living an ascetic life. The battle at Takkolam was immediately followed by the invasion and capture of Kanchi by Krishna-III. He describes himself in his inscriptions as *Kachiyum Thanjaiyum Konda* (one who has captured Kancheepuram and Thanjavur). Eventhough his claim to have captured Thanjavur, the Chola capital, seems to be nothing but an empty boast, the fact remains that he inflicted a severe blow on the Chola power. Indeed K.A.N. Sastri says, that *the Chola empire was no more: it had to be built up all over again.* After Rajaditya's death at Takkolam battle field, his brother Gandaraditya succeeded to the Chola throne. His inscriptions have been found in Thiruvothiyur and other places in the district. They are dated in the fifth and seventh years of his reign. Gandaraditya was succeeded by his

younger brother Arinjaya Parakesari who had a reign of perhaps only one year before he died on the battle field of Arrur. Though Arinjaya's inscription have not been found in the district, his gift to the Thiruvothiyur temple is mentioned in an inscription of Parantaka.

During the rule of Gandaraditya or Arinjaya, the Chola power did not witness any rapid recovery from the blow that it had sustained at the hands of Krishna-III, even though some feeble attempt were made by them as is evidenced, for example from Gandaraditya's alliance with the Banas. But the reign of Sundara Chola Parantaka - II (AD 956-973) who succeeded his father Arinjaya, witnessed some determined attempts at revitalisation of the Chola power. His son, Aditya-II also ably helped his father in the task of bringing back the Chola glory. Inscriptions of Parthivendra Varman have been found in Uttiramerur and other places of Tondaimandalam. K.A.N. Sastri identified Aditya-II as Parthivendravarman[66]. Aditya-II seems to have been murdered by his own brother Uttama Chola, who, after wards ruled on the Chola throne from AD 970-985. His inscriptions have been found in Tirumullaivayil and Thiruvothiyur.

Rajaraja (AD 985-1014)

The accession of Rajaraja is a great epoch in the history of Tamil Nadu, as the Cholas were at the pinnacle of their glory during his period. Rajaraja aimed at recapturing every province that had ever been held by Parantaka-I and extending the empire still further, sent an expedition in the northern direction early in his region. An inscription from Kancheepuram, dated in the 6 year of Rajaraja (Rajakesari) recording a royal gift of a larger herd of sheep to a Durga temple states that the sheep were got when Sitpulinadu and Pakinadu were conquered by Paraman Malapadiyar *alias* Mummidisolan, the chief of Karukudi in Thanjavur kurram. The titles of the Commander make it clear that the expedition was undertaken in Rajaraj's reign. Rajaraja's inscriptions have been found in Thiruvothiyur, Padi, Puliyur, Poonamallee, Pallavaram, Kancheepuram and other places in the district.

During Rajaraj's rule, Tondaimandalam came to be called as Jayamkondacholamandalam after one of his titles, Jayamkonda Cholan. Uyyakkondan was another title of Rajaraja and Poonamallee in the present Chengalpattu-MGR district was called Uyyakkondan Cholapuram as evident from one of Rajaraja's inscriptions.

Rajendra-I (AD. 1012-1044)

Rajendra-I inherited from his father, Rajaraja a vast empire. Inscriptions belonging to the reign of Rajendra-I, have been found in Thiruvothiyur, Tiruvanmiyur, Poonamallee, Tirumullaivayil, Uttiramerur, Tiruttani, etc. of the district. During his period, Uttiramerur was also known as Rajendra Chola Chaturvedimangalam[67]. A set of 31 copper plates in Tiruttani belonging to his sixth regnal year (AD 1018) describes the Chola political history tracing

from their mythical ancestors to Rajendra-I[68]. According to Tiruvalangadu inscriptions, Rajendra started from Kanchipuram on his march against the Ratta country and the march was victorious[69].

Another inscription in Thiruvothiyur temple informs that a pavilion in the temple was called *Mannikonda Chola* evidently to commemorate Rajendra's conquest of Manyaketa (Malkhed) which was under the Chalukyas. One of the queens of Rajendra-I was called Vanavan Mahadevi and interestingly enough, Pallavaram, a town in the district which still bears the same name, seems to have been called after her, for, it figures as Vanavan Mahadevi-Chadurvedimangalam in the inscriptions of Rajendra's successor Rajadhi Raja-I. There was also a *mata* (Monastery) in the Thiruvothiyur temple called Rajendra Cholan Mata evidently after the king Rajendra-I[70]. It is said that while Rajendra was returning from his Ganges Expedition, he had brought Saivas from the banks of the Ganges to his kingdom and established them in Kancheepuram and other parts of Chola country.

The closing years of Rajendra's reign formed the most splendid period of the histrory of the Cholas of the Vijayalaya. The extent of the empire was at its widest and its military and naval prestige stood at its highest[71].

Successors of Rajendra - I

Rajathiraja (AD 1018-1054), Rajendra-II (AD 1052-1064) Virarajendra-I (AD 1063-1069) and Adhi Rajendra (AD 1067-1070), ruled the Chola empire ably after Rajendra-I. The prestige and extent of the vast Chola empire was maintained by these rulers[72]. Their inscriptions have been discovered in many places of the district. Fierce Chola-Chalukya battles took place during the period of these rulers in which they emerged victorious ultimately. In the hotly contested battle of Koppam fought in AD 1052 between Someswara-I, the western Chalukya ruler and the Cholas, Rajathiraja fell mortally wounded. Rajendra-II, younger brother of Rajathiraja crowned himself king on the battle field, continued the battle bravely and chased the retreating Chalukyas up to Kolhapura and planted a pillar of victory there[73].

Later on, Rajendra-II inflicted yet another severe defeat on the western Chalukyas at Kudal sangamam with the object of preventing the latter's interference with the Eastern Chalukyan affairs.

Virarajendra (AD. 1063-1069)

As Rajendra-II's immediate brother Rajamahendra who took part in the battle of Kudal sangamam and who was chosen heir-apparent in 1059 AD met with premature death and his younger brother Virarajendra-I succeeded Rajendra-II to the Chola throne. The district of present Chengalpattu-MGR continued to remain under the Chola empire undisturbed. Virarajendra appointed Madurantaka described as his son *than Thiruppudhalvan* (தன் திருப்புதல்வன்) to rule over Tondaimandalam with the title *Cholendra*.[74] One of Virarajendra's inscriptions refers a street in

Thiruvothiyur as `Jayasingakula Kalapperumderu' and a certain officer of Virarajendra was called "Jayasinga Kula Kala Villupparaiyan" who instituted an enquiry in the temple affairs. The prefix 'Jayasinga Kulakala' in both the above mentioned names seems to be a reference to Virarajendra himself, who was the opponent of the western chalukya king Jayasinga-III and who might have had it as his surname[75].

Thirumukkudal, a village in the district located at the 20 km. from Kancheepuram on Kanchipuram-Chengalpattu road has a close link with Virarajendra, as an important inscription belonging to his reign has been found in the Venkatesaperumal temple of the village. Three rivers, Cheyyar, Palar and Vegavathi meet here giving the name Thirumukkudal *(i.e.)* holy meeting place of three (rivers), to the village.

The celebrated Tirumukkudal inscription of Virarajendra (AD 1067) contains a very detailed account of the entire budget of a hospital *(athulakalari)* run by the local temple and a college for imparting Veda. The college was a comparatively small institution and only two Vedas *(i.e.)* Rig and Yajur, and Vyakarna with Rupavatara were taught there. Provision was made for one teacher and ten pupils for studying each of the two Vedas and for one teacher and twenty pupils in the Vyakarna school. The Veda teachers were remunerated, at the rate of one *Padakku* (பதக்கு) of paddy per day and four gold kasus per annum, while the teacher of Vyakarna was paid a *tuni* twice a *padakku* - per diem and ten Kasus per annum.

It is clear that the Veda school was only what is now called as *'Adhyayana patasala,* a school, where pupils are trained to repeat the text by rote. The pupils were provided not only with food on the basis of 1½" nails of rice per diem and suitable side dishes, but with a mat for sleeping on, oil for their heads on Saturdays (51 Saturdays being counted for the year) and a night light. There were also two women servants who looked after the menial services required by the schools and their pupils[76]. A Siva temple in Thiruppalaivanam near Ponneri is said to have been built by Virarajendra though some researchers ascribe this temple the period of Kulottunga-III[77].

Adhirajendra (AD 1067-1070)

In the year AD 1070 Virarajendra died and in the same year, after three weeks of his death, Adhirajendra, who became heir apparent and Yuvaraja and the emperor also died[78].

It is also said that after the death of Virarajendra there was a rebellion in the Chola country and Chalukya Vikramaditya, who had marital alliance with the Cholas by marrying one of the daughters of Virarajendra, proceeded to Kanchi, nibbed a rebellion in the bud, installed Adhirajendra formally on the throne at Gangaikonda Cholapuram and returned after a month to his country[79].

Kulotunga-I (AD 1070-1120)

Kulotunga-I, the Eastern Chalukya prince was a Chola by distaff side as his mother (Ammangadevi, daughter of Rajendra - I) and grandmother (Kundavai, daughter of Rajaraja-I) were the Chola princesses. He married Madurantaki, daughter of Rajendra-II.

Soon after Kulotunga - I[80] heard that the Chola king (Adhirajendra) had lost his life in a popular rising, he captured the vacant Chola throne. During his time, the Chola empire become somewhat depleted in its extent, for, Ceylon which was a part of Chola empire till his time, asserted its independence and Gangavadi and Vengi also slipped out of the Chola hands, former to the Hoysalas under Vishnuvardhan and the latter to the Western Chalukyas under Vikramaditya-VI. But, Kulottunga exhibited the strength of the Chola power by under taking two successful invasion against the Kalinga territory in 1096 and 1110 AD. The second Kalinga expedition has been immortalised by poet Jayamkondar in his celebrated poem *Kalingathuparani*. The Chola army was led by a scion of the Pallava family called Karunakara Tondaiman who was then under the services of the Cholas. He is stated to have had his headquarters at Vandainagar. K.A.N. Sastri[81] and Pandit M. Raghava Iyengar identify this Vandainagar, with the present `Vanduvangarai',- a village near Kumbakonam. But, Dr. K.V.Raman seeks to identify this Vandainagar with the modern Vandalur in the Chengalpattu-MGR district on the strength of V. Kanakasabhai Pillai's lucid summary and translation of 'Kalingathupparani'[82]. Mahabalipuram and Kancheepuram have been mentioned in the Tamil work as important towns of the time.

To Kulottunga-I, Kanchipuram was next in importance to his capital Gangaikonda Cholapuram, as there was a royal palace (in Kancheepuram) with an *'abhisheka mandapam'* from where the king issued several important grants[83].

Kulottunga's inscription with dates have been found in Thiruvothiyur, Tirisulam, Tirumazhisai, Arapakkam, Kancheepuram and many other places.

An inscription[84] in the Adhikesave Perumal temple of Arapakkam, a village in Kanchipuram taluk, belonging to the regnal year of Kulottunga-I (AD 1072) seems to register a gift of land for two perpetual lamps to the God Tiruvinnagar Alwar by one of the queens of Kulottunga-I, Trailokya Mahadevi, one on behalf of her mother Umainangai and the other on behalf of Vikrama Kesari Pallavarayar, probably the father of Trailokyamahadevi. This inscription gives an inference that one of the queens of Kulottunga belonged to Tondaimandalam as she seemed to be the daughter of a Chieftain of the Pallava origin. Another queen of Kulottunga-I, Solan Sorudaiyal *alias* Kadavan Mahadevi was apparently a princess of Pallava extraction[85]. One of Kulottunga's inscriptions[86] in Ekambaranatha temple, Kanchipuram belonging to his 40th regnal year (1110 AD) records that during his reign Aditan

Kampamadesigar *alias* Tiribhuvanamudaiyal and Adittan Andalkuttiyar *alias* Anukkiyar Cholakulavalli, the king made a gift of land for offerings and worship in the temple. These lands belonged to the temple but were enjoyed by the weavers. They did not cultivate them and the king resumed the lands and made a gift of them to the temple again. The inscription refers to the other queens[87] of Kulottunga and the antiquity of the weaving industry in Kanchipuram.

After Kulottunga - I

After Kulotunga-I, came Vikrama Chola (AD 1118-1135) Kulottunga-II (AD 1135-1150) and Rajaraja- II (AD 1146-1173) in succession, whose inscription have been found in many places of the district. Though Vikrama Chola's rule was marked with warfare, others mentioned above ruled in peace[88].

Kulottunga-II patronised the famous Tamil poets Kamban, Sekkilar, Ottakuthar and Pugalendi each of whom contributed his magnum opus to the Tamil Literature. Of these illustrations Tamil poets, Sekkilar and Pugalendi belonged to Tondaimandalam. The birth place of the former was Kunnathur and the latter was Ponvilainda Kalathur, both flourish in the same name in Chengalpattu taluk of the district. There is a well-known Tamil tradition attributing to the rivalries of Ottakuttan versus Pugalondi, Sekkilar was not only a poet but also a friend philosopher, adviser and trusted Minister of Kulottunga-II.

Kulottunga-II was followed by his son, Rajaraja-II, whose reign also like that of his father was peaceful. One of his inscriptions found at Thiruvothiyur mentions his queen as Mukkokilanadigal while another informs us of a gift made by a certain Kulottunga - Chola Mahibala, son of Arrur Nadalvan a native of Cholendra Singanallurpalli in Paiyurkottam in Jayamkondacholapuram. Though the major part of Rajaraja-II's reign witnessed peace, the closing years were marked by an outbreak of a fierce civil war in the Pandyan country. The ultimate result of the civil war was dreadful to the Chola powers. K.A.N. Sastri writes[89], *Out of the ashes of the Civil War arose Pandya power which in its renewed strength soon swallowed up both the kingdoms (Chola and Sinhalese) which had espoused the causes of protogonists in the Civil war.*

Rajathiraja-II, brother of Rajaraja-II succeeded on the Chola throne and ruled from about AD 1163 to 1179. His inscriptions have been found in many places of the district. He continued the Chola policy of intervention in Pandyan affairs, successfully drove back the Sinhalese and placed Virapandya on the Pandya throne as against Kulasekara who found guilty of treachery towards the Chola power. Rajadhiraja-II's active association with the district is well attested by the presence of his inscriptions at places like Thiruvothiyur and Tirisulam. A Thiruvothiyur rocord dated in his 9th year

speaks of Rajathiraja's personal visit to the Thiruvothiyur temple on the occasion of the Panguni Uttiram festival in the temple. Another epigraph from the same place mentions an officer incharge of the Thiruvothiyur temple, called Kaliyan Tondai Tirunattuperumal *alias* Vikramachola Padurnadalvan.

About 1178 AD, the Chola throne passed on to the hands of Kulottunga-III the last of the great Cholas who ruled it till about AD 1216. Kulottunga-III has been called the last great Chola king to enjoy the benefits of an extensive Chola empire. From his time, if not even earlier, began the extremely troublesome period for the Chola empire which came to be threatened by disruptive forces from within and the ambitions and the newly rising powers from outside. Thus, eventhough Kulottunga-III, in the early years of his reign actively interfered with the protracted Pandyan Civil War and put his own candidate Vikrama Pandya on the Pandyan throne. His last years, saw one of the fiercest invasions of the Chola dominion spearheaded by Maravarman Sundarapandya, who was the first ruler of the 'Second Pandya Empire' and who retrieved the Pandya country from the whirlpool of civil war and made it the most dominate power of south India in the 13 century. Maravarman Sundarapandya invaded the Chola country in AD 1216-17 which led Kulottunga-III's fight and the latter was restored on the throne with the Hoysala intervention under Viranarasimha, who negotiated peace with the Pandyas. With the Kulottunga-III, the Chola empire began to crumble giving way to the rising Pandyas.

There were inscriptions found in the district bearing testimony for the close association of Kulottunga-III with the district. An inscription issued in his 19th regnal year informs us that Kulottunga-III visited Thiruvothiyur temple on the occasion of 'Ani' festival[90].

Two inscriptions from Thiruvothiyur make mention of the king's secretaries like Minavan Muvenda Velan and Neriyudaichola Muvenda Velan. According to the inscriptions, Neriyudaichola might have been a surname of Kulottunga-III himself, Puliyurkottam, one of the Kottams or divisions to which Tondaimandalam was divided into, then, figures as Kulottunga - Chola - Valanadu in Kulottunga - III's epigraphs[91].

The Decline of the Chola power and the Rise of the Feudatory Chieftains in the District

The last phase of the Chola empire was the reigns of Rajaraja-III (AD 1216 - 1246) and Rajendra-III (AD 1246-1249). Their reigns constitute a pitiable record of how the central authority of the mighty empire was slowly undermined and finally overthrown by the disintegrating elements and the centrifugal forces that were gaining ground on account of the growing power of the Chola feudatories like the Telugu Cholas, the Kadavarayas and others, who wanted to shake off their position of vassalage and assert their independence[92].

Sekkizhar Temple, Kunrathur

It is seen from the inscriptions of the feudatory chiefs that they gradually began to shed the names of their overlords *(i.e.)* the Cholas and issue them in their own names. Many of such inscriptions issued by the feudatory chieftains are found in the district. As the suzerainty of the Cholas was waning, the neighbouring rulers such as Hoysalas and Kakatiyas began to take it to their advantage.

Rajaraja-III (AD 1216-1246)

Rajaraja-III proved to be an incompetent ruler under whom confusion increased and the dissolution of Chola Kingdom hastened. In the north of the Chola Kingdom, Hoysala forces were present in Kanchipuram perhaps to combat the rising Telugu Cholas of Nellore. The Kadava Chieftain Kopperunjinga became more and more powerful and entered into an alliance with Pandya King Sundarapandya against the Cholas and their Hoysala Protector[93]. The ruler of Tondaimandalam area during the time was the Yadavaraya Chieftain Vira Narasingadeva. He was a feudal vassal of Rajaraja-III. He enjoyed vast powers and therefore was called Maha Mandaleswara and one of his inscriptions credits him with the title Tripuvanachakravarti.

While he was very loyal to the monarch, Kadava Kopperumsinga another vassal of the Cholas aimed at independence at the expense of the waning powers. It caused friction between the two chieftains of the Cholas and there is a reference to a fight that took place at Oratti near Madurantakam in Chengalpattu-MGR district between Viranarasinga Yadavaraya and Kadava Kopperumjinga[94]. The Kadavarayas came into conflict with the Hoysalas also. In an inscription belonging to 1218 AD - Hoysala Viranarasimha styles himself *Kanchi Kangara Kadavakulantaka* and *Kadavaraya-disapatta*. Inscriptional evidences are there to testify that during the time of Rajaraja-III, the Hoysala Viranarasimha was ruling from Kanchipuram and his troops were stationed there[95]. Rajaraja-III eschewed the Pandya supremacy by stopping an annual tribute which resulted in the Pandya invasion in which Rajaraja-III was defeated and made to flee his capital. Rajaraja-III attempted to join his Hoysala ally at Kancheepuram but was intercepted and after a battle at Tellaru, was taken prisoner by the Kadava Kopperunjinga and confined in the fortress of Sendamangalam[96]. This shocking news of imprisonment of the Chola Monarch by his feudatory reached the Hoysala King Viranarasimha, who sent an army which terrorised Kopperunjinga and got the Chola ruler released and his throne restored. The Hoysala army did not stop with this, advanced further south and defeated the Pandyas. Thus, the Chola country became a protectorate of the Hoysalas during the time of Rajaraja-III.

Rajaraja-III's inscriptions have been found in many places of the district like, Thiruvothiyur, Kancheepuram, Tirunirmalai, Kunnathur, Thirumazhisai, Tirumullaivoyil, etc. The dates range between 3rd and 28th regnal years and give some useful information pertaining to the district. It is known from an

epigraph that Rajaraja-III in his 19th year (AD.1235) paid a visit to Thiruvothiyur temple on the occasion of 'Avani-Tirunal' and listened to the music of Padiyalar in Rajarajan Tirumandapam[97]. The royal officials and feudatories at the services of Rajaraja-III who had been drafted from Tondaimandalam were Viranarasinga Yadavaraya,Madurantaka Pottappi Chola, Gandagobala, Erasiddharasa-Nilagangarayan Kadavan, Sagangadeva, Sambuvarayan, Alagiyasingan and Oriarasan son of Paiyurnadalvan. Besides these, an epigraph dated the 14th year of Rajaraja-III records the gift of gold ornament to the Vishnu temple at Kunnathur by one Perumbanan Kunraperumal *alias* Cholakeralan and his son Muvendadasan. Probably, the former was also a chief of Rajaraja, belonging to the district. Another epigraph from Tirunirmalai mentions the gift of money to the temple by Ilappadaivendan (the conqueror of Sinhalese army) one of the *agambadiyars* of prince Cholagangadeva[98].

During the life time of Rajaraja-III itself, the Hoysala Generals Bhutadoya Dantanayaka, Mahapradhani Amman Dhandanayaka, Vallaya Dandanayaka and others issued grants to temples in Kancheepuram, citing the regnal years of Rajaraja-III[99]. Even Kalinga ruler Aniyanga Bhimadeva Raghuta adopted this course in making an endowment in Kancheepuram (1236 AD).

Rajendra - III (AD. 1246-1279)

Rajendra-III, unlike his predecessor, was an abler prince. In his task of regaining the lost prestige of the Cholas, he attained initial victory as he had defeated Maravarman Sundara Pandya but with Hoysala friendship. As the Hoysalas turned hostile to the Cholas, Rajendra-III won the friendship of the Telugu Chola Chieftains who were ruling over the territory of Nellore, Cuddappah and some parts of the present Chengalpattu-MGR district. The Telugu Chola King Tikka even assumed the title Cholastha Panacharya - the establisher of the Chola. Pandya Maravarman Kulasekara-I, waged the war against Hoysala - Ramanatha, who had allied himself closely with Rajendra-III and defeated both in AD 1297[100]. That, is the last blow landed upon the Cholas and Pandya Kulasekara became the unquestioned master of the Chola country and of the Tamil districts of the Hoysala empire over which Ramanatha had ruled.

Minor dynasties

One of the striking features in the south Indian political scene especially in Tondaimandalam, during the 13th Century was the rise of many feudatories like the Telugu Cholas, the Kadavarayas, the Yadavarayas and Sambuvarayas. These Chieftains virtually shared the Tondaimandalam region and ruled acknowledging the suzerainty of the Cholas in beginning and eschewing it gradually until they became independent.

They even began to issue inscription in their own names replacing the tradition of issuing in the names of thier overlords. Such inscriptions are available in quite a number in the district.

The Telugu Chodas

Towards the end of the region of Rajaraja-III, the Telugu Chodas were rising into prominence in the present Chengalpattu-MGR district and its surrounding districts of Nellore, Cuddappah and Chittoor (Now in Andhra Pradesh State). They were the most prominent among such independent or *quasi*-independent feudatories who left their mark on the political history of Tondaimandalam. The Telugu Chodas belonged to the Royal family of the Cholas who migrated towards north and carved out petty principalities there. A Sanskrit inscription in Grantha from Thiruvothiyur dated Saka 1129 (AD 1207-1208) belonging to the Telugu Choda King Tammu Siddhi, traces the geneogy of this branch of the Telugu Chodas from the Solar line and mentions the Great Karikala Chola as one of its ancestors[101].

Though the exact chronology and the geneology of the Telugu Chodas are not clearly mentioned, the epigraph refers to Madurantaka Pottappi Chola and Telunga-Vidya as among its early ancestors whose time, however, is not known. Then came Beta, the feudatory of Vikrama Chola. Beta's son was Erasiddha who had three sons - Manmasiddha, Beta and Tanmusiddha. It is the last mentioned king whose inscription dated AD 1207-1208 has been found in Thiruvothiyur. According to Robert Sewell, Tammu Siddha succeeded Mammasiddhe in AD 1205 because Beta-II, who was religiously inclined, relinquished the kingship in favour of his younger brother[102].

The geneology of the Telugu Chodas of Nellore (whose rule extended towards South of Nellore including the present Chengalpattu-MGR district) subsequent to Tammusiddha is somewhat confusing. The existence of many kings with more or less similar names and titles, causing the confusion. But, Robert Sewell's scheme of geneology and chronology can be given here[103]. After Tammusiddhi, came Tikka *alias* Alum Tikka Kalati-I who ruled roughly from AD 1223 to 1250. After him, came Manusiddha-II *alias* Vijayaganda Gopala who ruled between AD 1250 and 1291. After him, came Nalla Siddhi-II, Tikka-II or Tirukkalatti (about AD 1278, 1280), and Mannusiddhi *alias* Viraganda Gopala (About AD 1290 to 1316).

As already mentioned, the Telugu Chodas of Nellore were, in the beginning, feudatories who acknowledged the overlordship of the Chola monarchs. Thus, Erasiddha's father, Beta was himself a feudatory of Vikrama Chola[104]. Many of the inscriptions of Kulottunga-III, from places like Tiruppalaivanam, Kalahasti and Vandalur as well as some of the inscriptions issued by Telugu Choda princes like Nalla Siddha bear testimony to their position of vasalage to Kulottunga-III[105]. In Thiruvothiyur also, an inscription of Kulottunga-III, dated to his 38th regnal year mentions an agent of Sittarasan in that place. This Sittarasan might have been a name of a Telugu Choda Chieftain probably Manusiddha or Manmasittarasan[106]. During the closing years of Kulottunga-III, Nalla Siddha, the Telugu Choda Chief rebelled againt the Central authority and held Kancheepuram under his independent rule

for a short period and this was undone by Kulottunga-III, himself by an invasion[107] by about AD. 1196 and thereafter the Telugu Chodas were loyal and friendly to the Cholas during the reigns of Rajaraja-III and Rajendra-III. The disintegrating Chola empire under these weak monarch gave opportunities to the Telugu Chodas to rise again and to assert independence. Thus, while the inscriptions of Rajendra-III are virtually absent in the vicinity of Kanchi, those of the Telugu-Choda king Tikka-I predominate. An inscription of Kakadiya king Ganapati dated AD 1249 has also been found in Kancheepuram. This might indicate that Kancheepuram was a part of the territory of the Telugu Chodas who first held it in nominal subjections to the Chola King, and then to the Kakatiyas, who under Ganapati extended their empire as far south as Kanchi[108]. It was by this time *(i.e.)* when Kancheepuram was under the Telugu-Chodas, acknowledging the suzerainty of the Kakatiyas, Jatavarma Sundarapandya-I (accession AD. 1251) invaded Tondaimandalam came to Kancheepuram and killed Gandagopala, the Telugu-Choda chief of the town, put the vanquished Telugu-Choda's brother in-charge of it and then defeated Telugu-Choda's overlords, the Kakatiyas. Scholars differ over the identification of the Gandagopala killed by the Pandya. Some opine it was Viraganda Gopala and others view, it might be Vijayagandagopala[109]. The fact is that the inscription of both Vijayaganda gopala and Viragandagopala have been found in the district. While only two inscriptions of the latter, dated 3rd and 4th year of his reign have been found at Kunnathur, there are many inscriptions those of the former ranging between the 3rd and 33rd years of his reigns. The places where Vijayagandagopala's inscriptions have been found in the district are Kanchipuram, Thiruvothiyur, Padi, Tirumullaivayil, Kovur, Kunnathur, Tirumazhisai, Poonamallee, Tiruneermalai and Puliyur. Some of these inscriptions bear the signature of Gandagopala. His inscriptions testify how he was associated with the region personally and through a number of his officials like Panchandivaran, Nilagangarayan, Tiruvannamalai Perumal Lankeswaradeva, Arunagiri Perumal Nilagangarayan, Vellamerindar Panchandivaran[110].

Sundarapandya-I with the help of Kadava Kopperunjinga defeated Gandagopala, the Telugu Choda and the Kakadiyas to whom the Telugu Chodas were paying tributes then. With these defeat at the hands of the Pandya, the Telugu Chodas shifted their allegiance from the Kakatiyas to the Pandyas[111].

The Kadavarayas

Kadavarayas who claimed to be the descendants of the Pallavas were another important feudatories of the Chodas, who came into prominence during 12 and 13 Centuries, in the present North Arcot and some parts of Chengalpattu-MGR district. Though they were feudatories from the days of Vikrama Chola, it was under the leadership of Kadava Kopperunjinga, they

rose to the position of an independent power, though only for a short time. Kopperunjinga's inscriptions have been found in Kunnathur, Velacheri, Kancheepuram and Tirumazhisai.

Kadava Kopperunjinga at Kancheepuram

Kopperunjinga, as pointed out earlier, utilised the weak rule of Rajaraja-III for strengthening himself. When the Pandya King Maravarman Sundara-I invaded the Chola empire and defeated its king Rajaraja-III, Kopperunjinga rebelled against his overlord, - the Cholas, - and even took him a captive and released him due to the Hoysala invasion of the Kadava country. The defeat of Kopperunjinga at the hands of the Hoysala Narasimha in 1230-1231 curbed the Kadava's ambition temporarily. He once again acknowledged Chola overlordship, up to the year AD 1243, and from that year onwards, his inscriptions were recorded in his own regnal years, which might mean that he became more or less independent[112]. Later on, Kopperunjinga scored a victory over Someswara and went up to Kanchi, which was then under the control of Kakatiya Ganapati and his (latter's) feudatory Vijayagandagopala. This Kanchi expedition took place sometime around AD 1253 as an inscription of Kopperunjinga of that date is found at Varadarajaswamy temple, Kancheepuram. Six of his inscriptions are found in the temple ranging from AD 1253 to 1262.

In all of these inscriptions, his name is referred to as *Sakalabhuvana Chakravartin*. In his expedition, Kopperunjinga was helped by his son Kadavan Kumaran who is eulogized as the Lord of Mallai, Mylai, Kanchi and Tundaganadu (Tondaimandalam)[113].

As already mentioned, Sundarapandya-I defeated Kopperunjinga by about AD 1264 and subsequently he became a vassal to the Pandyas. With the death of Kopperunjinga the Kadava power for all practical purposes, ceased to be a force[114].

His inscriptions in Varadarajaswamy temple, Kanchipuram, mention two Nilagangarayans, one Kodakkon Nilagangarayan and another Arunagiri Perumal Nilagangarayan, son of Panchavadivaran Nilagangarayan and their gift to the temple. His inscriptions are also found in Tirunirmalai and Tirumazhi sai of the district.

Yadavarayas

Yadavarayas were a set of another feudatories who had their principalities in and around the district. Their inscriptions are found in Tirupasur (near Tiruvallur), Gudivallam, Thiruvothiyur and Koyampedu of the district. The first Yadavaraya ruler was probably Ghattideva Maharaja *alias* Kulottunga Choda Yadavaraya who lived during the reigns of Kulottunga-III and Rajaraja-III. The most celebrated Yadava ruler was Vira Narasinga Yadavaraya whose tenure of Chieftainship lasted for a long period. He served the Chola kings, Kulottunga-III, and Rajaraja-III and his jurisdictions covered the districts

of Chittoor, (now in Andhra Pradesh State) North Arcot, South Arcot besides the present Chengalpattu-MGR district. Yadavaraya's inscriptions are found in Thiruvothiyur temple. Viranarasinga Yadavaraya was such a loyal friend to the Chola power that he fought a fierce battle with Kadava Kopperunjinga at Uratti (near Achirappakkam of the district) when the latter tried to subvert the Chola authority[115].

He lived to see the decline of the Cholas and the rise of the Pandyas under Jatavarman Sundarapandya-I. His latest year seems to be A.D. 1263. In the time of Rajaraja-III himself, there were two more Yadavarayas, as mentioned in inscriptions from Padi (Saidapet taluk). One of them was a certain 'Silampanindan' Yadavarayan of Parameswaramangalam of Semburkottam, who gave a gift of money for lamp to the temple at Padi. This inscription is dated in the 8th year of Rajaraja-III. Another inscription of the same king dated the 9th regnal year, records the gift of two gardens and two houses made to the temple at Padi by Salukki Narayanna Yadavarayar. The relationship between these two Yadavarayas and Narasinga Yadavaraya is not known.

The last known Yadavaraya chief was Sriranganatha Yadavaraya. On the basis of an inscription of the Chieftain found in Thiruvothiyur, his date has been fixed as AD 1336-37. The astronomical details of the Thiruvothiyur epigraph are taken to work out correctly to the 24 May 1351, which means his first year after accession, was AD 1336-37, during which he might have succeeded Tiruvenkatanatha Yadavaraya. He ruled for 24 years and as such, he was contemporary of Rajanarayana Sambuvaraya and also the Hoysala Ballala-III during his closing years. His territorial jurisdiction appears to have extended over the northern portion of Tondaimandalam comprising parts of present Chengalpattu-MGR district and North Arcot districts of Tamilnadu and Chittoor district of Andhra Pradesh. He was for sometime subject to the imperial authority of the Hoysalas. As he lived till about AD 1360, he might have also witnessed the beginnings of the Vijayanagar conquest of Tondaimandalam which took place between AD 1360 and 1365[116].

Eastern Ganga Interlude at Kanchi

There are two interesting inscriptions mentioning the gift of the Ganga king Ananga Bhima-III and his queen Somaladevi of Arulalaperumal temple[117]. One of them is dated the 19th year of the reign of Anantavarma Kabutadeva of the Eastern Ganga family *(i.e. Ananga Bhima-III)*. The date of this inscription corresponds to AD 1230. It records the gift of the village Udaiyakamam in Anantarudra-Vishya by Somaladevi Mahadevi for offerings and worship to God Allalantha, while she was in Abhinava Varanasi, - the modern Cuttack in Orissa which was the capital of the Eastern Gangas. The second inscription records a gift of 128 cows and 4 bulls by the same king and dated the 20th year of Rajaraja-III which corresponds to AD 1235. Regarding the latter inscription, there is no controversy. But the first inscription dated the regnal

year of Ganga king had led Dr. T.V. Mahalingam to postulate on intrusion of Eastern Ganga forces to Tamil Nadu. According to him, the Eastern Ganga army entered Kancheepuram and occupied it for a short time and was later driven out by the Hoysala Narasimha-II. He tries to identify the foreign troops (Melachadesas) that helped the Kadava during his attack on Rajaraja-III as the Eastern Ganga forces. Later on, according to him, the Eastern Ganga forces were driven out by the Hoysala Narasimha-II, who claims in his epigraph that he pursued the *Trikalinga* forces which he identifies with the Eastern Ganga forces. In another inscription at Kanchi itself, mention is made of Viranarasimha's invasion and uprooting of the Magara Kingdom (Magararajyam Nirmulya), his setting up of Chola king who had sought his protection and his stationing at Kancheepuram an army of the pherundas (probably a regiment) for uprooting the evil doers (dhustanirmulam artham tatra beherunda varggam Sthapayitva). He thinks that the `dhusta' element at Kanchipuram was none other than the Trikalinga army. All this, he believes, occured in AD 1230. But, Dr. Sircar does not agree with his view and states that Eastern Ganga Army could not have penetrated as far south as Kanchi, without conquering thousands of square miles of the Kakatiya territory that lay north of the Chola territory and there is absolutely no proof to show that Anangabhima-III, was ever engaged in a successful war with Ganapati. He also states that Hoysala Viranarasimha-II was in possession of Kanchi even in March 1229 AD, whereas the Eastern Ganga inscription is dated AD 1230. He says that it is thus very difficult to believe that the place was occupied by the army of Anangabhima-III in 1230. He thinks that the Hoysala's claim against Trikalinga forces may be an empty boast as his other claim regarding the conquest of the Vindhyan region. Dr. Sircar further surmises that Somaladevi, the wife of the Eastern Ganga king, was probably the sister or daughter of the Chola king Rajaraja-III through a Hoysala princess and hence, the presence of the Eastern Ganga inscription regarding a pious gift does not imply any political conquest[118].

Under the Pandyas

Jatavarman Sundara Pandya, under whom the Second Empire of the Pandyas reached its widest extent, brought the whole of South India up to Nellore and Cuddappha, including Tondaimandalam, under his supremacy. He made Kancheepuram the second capital of the Pandyas[119]. He is said to have performed his *Virabhisheka* in Nellore and Kancheepuram. The feudatories and minor chieftains in Tondaimandalam who were paying tributes to the Cholas, now shifted their allegiance to Sundarapandya-I and his successors. The Pandya rule in the district is well-attested by the inscriptions of Jatavarma Sundara-I, Maravarman Kulasekara, Jatavarman Sundara-II, Maravarman Vikrama and Jatavarman Sundara Pandya-III in Thiruvothiyur, Kancheepuram, Tirumullaivayil, Tirunirmalai, Tirisulam, Kunnathur, Poonamallee and other places.

Jatavarman Sundara-I launched on an ambitious policy of expansion which met with splendid success. He defeated the Chola King Rajendra-III, Hoysala power under Someswara, Kadava Kopperunjinga, Telugu Chola Vijayagandagopala and Kakatiya Ganapati (both of whom he killed). He celebrated the new conquests by titles such as Kancheepuram 'Varadishvara' and 'Kancheepuram Konda'[120]. The erstwhile feudatories of the Cholas now transferred their allegiance to their new master.

Invasion of Malik Kafur

But, this splendid hegemony of the Pandyas over a considerable portion of South India and which spread as far north as Madras and even Nellore, could not prevail for long, because a civil war which was the usual melody of the Pandyan Kingdom broke out soon after the death of Maravarman Kulasekara-I in about AD 1308. The civil war took place between the latter's sons Virapandya and Sundara Pandya, the two rival claimants to the Pandya throne[121]. Defeated by Virapandya, Sundarapandya sought the help of Malik Kafur, the General of Allaudin Khilji, who had then making his exploits in the Deccan. Malik Kafur invaded "both the Tondaimandalam and Solamandalam" in AD 1310 and raided many cities and temples[122]. But, this invasion did not leave any permanent results. At best, it was a military raid which got the Muslim General a large booty through plunder and desecration[123]. The civil war in the Pandya country continued even after the Malik Kafur's return to Delhi in 1311[124].

The Chera Rule

In the year, following the return of Malik Kafur to Delhi, an enterprising Travancore ruler was found to be in occupation of practically the whole of Chola country. This was Ravivarman Kulasekara, who was born in the year AD 1266-67. In AD 1313-14, he came to Kancheepuram and celebrated his coronation ceremony[125] on the bank of river Vegavathi, in his fourth year. He called himself as *Vegavathinathan* or Lord of Vegavathi[126]. One of his inscriptions found in Poonamallee, gives his credit for a victory over Sundara Pandya. This Poonamallee record shows that two fishes of the Pandyas surmounted by an elephant goad, are a certain indication of Kerala ascendancy over the Pandya[127].

Another inscription of the Chera King in Arulalaperumal temple of Poonamallee gives the surname, *Cherapandiya Chaturvedi Mangalam* to the place.

Kakatiya Pratapa Rudra at Kanchi (AD 1316)

But, the Chera hold on Tondaimandalam did not last long, for, Kakatiya King Pratabarudra-II forced the Chera to retire to their own kingdom and installed a Telugu Governor, Manavira in Kancheepuram in AD 1316[128].

Hoysala King Ballala-III and the Muslim Invasion

Subsequent history of Manavira is not known and so is the Kakatiya's supremacy over the district. Probably, political uncertainty that prevailed in this region and indeed in Tamil Nadu was further aggravated by another muslim invasion in AD 1327[129]. This time, the army of Muhammed Bin Tuglak, after overcoming the Deccan, marched against the Hoysala Capital Dwarasamudra and caused considerable damage and marched further south and captured Madurai. An inscription of Sakalaloka Chakravartin Rajanarayana Sambuvarayan in Thiruvothiyur, dated the 7th year of his reign *(i.e. AD 1344)* is of special interest as it throws some light on how the region around Madras was affected by the Muslim inroads into South India in the 14 Century. V. Rangacharya, author of the Topographical List of Inscriptions is of the opinion that the Muslim invasion referred to in the Thiruvothiyur epigraph might be that of Muhammed-Bin-Tughlak (AD. 1327)[130].

The victorious army left behind it at Madurai a garrison which was a prelude for the formation of Madurai Sultanate later[131]. This oppressive rule lasted to about AD 1328[132]. Meanwhile, Ballala-III, the Hoysala King vacated the capital Dwarasamudra and settled at Tiruvannamalai sometime in AD 1328[133]. From there, he was operating against the Madurai Sultans. In AD 1335, Jalal-ud-din (A Madurai Sultan) revolted against his Delhi overlord and set up his independence. This infight between the Muslim powers was taken advantage of by the Hoysala King Ballala-III who had strengthened his power in the regions of South Arcot and Coimbatore. It was by this time that the Hoysala Vira Ballala-III paid a short visit to Kancheepuram. His inscription at Varadarajaswamy temple, Kancheepuram dated AD 1335 metions that Vira Bellala Deva was camping at Kancheepuram and that his Minister or Chief Kampayya Dannayaka made a grant to the temple. Probably, he stayed there with the officers of his army inviting the people to rise up in rebellion and wage war on the Muhamadans[134]. Another undated epigraph records that the Hoysala king and his queens visited this temple where they were seated on a throne called (after the king) Viravalladevan and render the Canopy 'Ariyanavallalan'. These inscriptions would clearly indicate that Ballala's sway extended, however, briefly to the Chengalpattu-MGR district[135]. The years between AD 1335 and 1342 were of great activity for Ballala in consolidating the Hoysala hold and making it a bulwark of attack on the Muslim power of Madurai. With a huge army, he encamped at Tiruchirappalli and fought a battle with the Muslim powers. But inspite of initial success, the battle proved disastrous for Ballala who was first taken prisoner and latter killed mercilessly in AD 1342. The Hoysala power did not recover from this blow. It survived for a year more under Ballala-IV and later about AD 1346 was over run by the victorious Vijayanagar power.

The Sambuvaraya's Rule in the District

Sambuvarayas were minor chieftains incharge of North Arcot and Chengalpattu regions under the Cholas and became independent at the downfall of their overlords. They were subordinates to the Pandyas, Hoysalas and Telugu Chodas and whenever circumstances favoured them they rose to prominence. Subsequently when the Pandya, the Telugu Choda and the Hoysala powers were on the decline in Tondaimandalam, the Sambuvaraya chiefs were incharge of the area till they were overrun by the Vijayanagar Kings. Two of them Venrumankonda Sambuvaraya (AD. 1331-1339) and Rajanarayana Sambuvaraya (AD. 1339-1363) ruled independently. About 38 of the latter's inscriptions are found in the Chengalpattu-MGR district. 'Rajagambira' was one of the titles of Rajanarayana Sambuvaraya. Sadras, near Mahabalipuram was also known as Rajanarayanan pattinam[136]. It is also opined that the Sambuvarayas fought to oust the Madurai Sultans in alliance with Vira Ballala-III. "The presence of Vira Ballala-III in AD 1334-5 at Kancheepuram, - the capital of the Sambuvarayas, definitely indicates the existence of friendship between them and it is not unlikely that the latter received some help as suggested by Ferishta, (A Muslim historian, chronicler) from Ballala in his war against Mussalmans"[137].

Vijayanagar Rule in the District

Harihara and Bukka, once the trusted agents of the Sultan of Delhi who were sent to restore his power in Deccan, turned out to be the founders of one of the greatest Hindu States of history which later distinguished itself pre-eminently in the defence of ancient Hindu culture against the onslaught of Islam. After establishing their sway over Kampili at first for the Sultan, and conquering more territory in the same manner, the two brothers returned to Hindu fold, proclaimed their independence and founded a new city on the South bank of Tungabadra to which they gave this significant names Vijayanagara (city of victory) and Vidyanagara (city of learning), the second name commemorating the role of Vidyaranya, the Saint who had religious influence over the brothers. Here in the presence of God Virupaksha, Harihara-I celebrated his coronation in proper Hindu style on 18 April 1336[138].

When the Vijayanagar Kingdom was founded, Tondaimandalam was under the rule of Venrumankonda Sambuvaraya (C.AD. 1321-1339) whose inscriptions have been found in the district[139].

The Vijayanagar power was rising slowly and steadily by territorial expansion and conquests. The Udayagirirajya, one of the provinces of the kingdom bordered on Tondaimandalam region, was under Sayana Udaiyar, the son of Kampana-I (AD 1352). His inscriptions are found in Kancheepuram and in the places north of the town. This shows the slow beginning of the spread of the Vijayanagar authority in the Tamil country. The extension of the Vijayanagar power was well-established after the brilliant victory scored by

Kumara Kambana, the son of Bukka over the Sambuvaraya and the capture of his fort at Rajagambiram in AD 1361. He entered Kancheepuram triumphantly and proceeded further south and crushed the Sultanate of Madurai. Ganga Devi, the royal poet and royal consort of Kumarakambana versified the conquest in her immortal, *Madhuravijayam*. As the symbolic revival of the Hindu power, the image of Ranganatha at Srirangam which had been removed for safety earlier was re-installed. In his southern campaign, Kambana was ably assisted by two Generals Gopanna and Saluva Mangu. The latter figures in two inscriptions at Varadarajaswamy temple, one of which mentions that his pradhani or Chief Pettarajan was authorised to levy certain taxes. Kambana's inscription dated AD 1364 is found at Kailasanatha Temple, Kancheepuram where he re-instated worship which was abandoned since long. His inscription dated AD 1367 is found at Varadharajaswamy temple, Kancheepuram. His inscriptions, have been found in other parts of the district also.

The Rajagambirarajyam conquered by Kumara Kampana has been identified with the area comprising the modern districts of Chengalpattu-MGR, South Arcot, North Arcot-Ambedhkar and Sambuvarayar[140].

When Kumara Kambana conquered the district, it was under the rule of the Sambuvarayas[141]. Kambana died in AD 1374 and his father Bukka-I continued to rule till 1377. The latter was succeeded by his son Harihara-II who ruled from 1377-1404.

Harihara-II - AD 1377-1404

His authority extended to a considerable portion of South India including the Tondaimandalam. His inscriptions are found in Kanchipuram, Thiruvothiyur, Thirumullaivayil, Tirumalisai, Padi and Kunnathur. One of his inscriptions refers Tondaimandalam as Jayankondacholamandalam, a name given to it in the time of Rajaraja-I[142]. One of Harihara's officers incharge of tax collection from the district was Mallappa Udaiyar.

Virupaksha-I

After Harihara's death, in about AD 1404, there was a succession dispute between his surviving sons. Virupaksha-I, succeeded in securing the throne between AD 1404 and 1405. In his time, according to Nuniz, Coromandal rebelled against the Vijayanagar authority and Virupaksha had to re-conquer the province of Tondaimandalam, Chola and Pandya countries. Other sources also confirm the Nuniz's accounts.

Bukka-II and Devaraya-I

But, Virupaksha's rule was soon cut short by his brother Bukka-II, who ejected him and ruled the kingdom between AD 1405 and 1406. After him, his brother Devaraya-I became the king and ruled till AD 1422. The inscriptions of all the three brothers, *(i.e.)* Virupaksha, Bukka-II and Devaraya-I are found in the district of Chengalpattu-MGR.

Devaraya-II (AD 1422 - 1446)

Devaraya-II ruled the country from AD 1422 to 1466. He reigned supreme over the entire South India. His inscriptions have been found in the neighbourhood of Kancheepuram, Thiruvothiyur, Tirumullaivayil, Kunnathur, Padi and Mangadu. There is some ground to believe that Kancheepuram city was temporarily captured by a Chieftain Vasantaraya whose inscriptions are found in the Varadarajaswamy temple, Kancheepuram[143]. It was during the rule of Devaraya-II that Thiruvothiyur came under the Chandragirirajya a province of Vijayanagar Empire comprising the present northern Tamilnadu and Chittoor district of Andhra Pradesh. One Pratabadevaraya is mentioned as the ruler in the inscriptions found at Tirumullaivayil and Mangadu. Robert Sewell identifies him with Srigirindra, the brother of Devaraya-II[144]. He was probably put incharge of this region to look after Devaraya's interest. An inscription from Thiruvothiyur registers an order of Devaraya's officers or representatives, Ariyappa Danayaka, Bukka Vriti-Appa and of prince Devaraya Udaiyar. The last was evidently Pratapa Devaraya, the brother of Devaraya-II, who is also mentioned in Triplicane and Mangadu inscriptions[145].

Vijayaraya-II (AD 1446-47) and Mallikarjuna (AD 1447-1456)

Devaraya-II was succeeded by Vijayaraya-II and shortly after, by his son, Mallikarjuna. The Vijayanagar empire met with great difficulty when it was under Mallikarjuna, as the combined forces of Bhamini and Orissa threatened its stability. The Oriyan ruler penetrated up to Kancheepuram and even occupied the town by AD 1465, though the occupation was only short lived. The Oriya expedition of Tondaimandalam was only a sudden raid which disappeared as speedily as it came, giving way to Mallikarjuna again in the district in AD 1465[146].

Mallikarjuna's inscriptions have been found at Tirumullaivayil and Kunnathur. The Kunnathur inscription informs that Mahamandaleswara Saluva Narasingadeva made some remission of Idangai taxes due from a new settlement of Kaikolars in the village. It was this Narasingadeva, who served as a chief under Mallikarjuna in the south, later on, usurped the Vijayanagar throne, and started the Saluva line of Vijayanagar rulers.

Virupaksha-II (AD 1465-1485)

After Mallikarjuna, the Vijayanagar throne passed on to the hands of his cousin Virupaksha-II. The Gajapatis of Orissa mustered strength and posed a danger to the Vijayanagar territory. They advanced towards south and came up to Nellore. This critical situation was ably faced by Saluva Narasimha, the powerful Vijayanagar Viceroy, who made the Oriyan forces to retreat by AD 1475-76. The problem to the empire never ended. About AD 1480, Muhammed-III, the Bahmani Sultan invaded Kancheepuram sieged the city and plundered much of its wealth. Iswara Nayaka, another Vijayanagar General was despatched to overcome the situation. He drove the Sultan out of the city and recovered the wealth plundered.

Saluva Narasimha (AD 1486-1491)

Virupaksha-II ruled till AD 1485, after which he was killed by his eldest son, who, in turn was killed by his younger brother, Praudhadevaraya. This confusion in the capital lent an opportunity to Saluva Narasimha, - the powerful subordinate to the Vijayanagar empire incharge of Tondaimandalam area, - to become the emperor in AD 1486. The Kunnathur inscription (about which mention has been made earlier) of Saluvanarasimha mentions him only as 'Mahamandaleswara' (Head of a Mandala or Division). But after AD 1486, he became the emperor of Vijayanagar. An inscription issued by him as king in his own name has been found in Thiruvothiyur. When Saluva Narasimha became the emperor, his local agent incharge of Thiruvothiyur region was Iswara Nayakar. He was evidently the father of Narasa Nayaka, the able lieutenant of Saluva Narasimha. Saluva Narasimha was an able ruler who kept the Tamil country intact within the empire, though he lost Udayagiri to the Oriyan rulers. He was a great devotee of Vishnu. He bestowed many benefactions on the Vishnu temple at Kancheepuram. He had the services of dynamic Srivaishnava leader named Kendadi Ramanuja Iyengar, who utilised the royal benefactions for various charitable and religious purposes at Tirupathi, Srirangam and Kancheepuram.

After the death of Saluva Narasimha (AD 1491), his general Narasa Nayakar became the virtual ruler of the empire. He also crowned himself King later on, by putting Narasimha's son Immadi Narasimha to death.

Krishnadevaraya (AD 1509-1529)

The Vijayanagar empire was at the zenith of its power and glory during the rule of Krishnadevaraya. By his ability and military powers he made his authority felt by the rebel chieftains of Ummattur, the Gajapatis of Orissa, Sultan Muhammed-II of Bahmani and the Sultan of Bijapur. As far as Tundiramandala (Tondaimandalam) and Cholamandalam in the south were concerned, they were so quiet and calm that Krishnadevaraya could not only afford to embark on a long and arduous war with Gajapati's in the north but also could pay frequent visits to holy places like Tirupathi, Kalahasti and Kanchi. His inscriptions are found in Kancheepuram., Thiruvothiyur, Kunnathur, Poonamallee, Mangadu and other places. The Kancheepuram inscriptions mention about his religious tour to the south after his military exploits against his enemies, his halting at the town and his benefaction to the temples of Kancheepuram.

One of the important historical events that took place during the reign of Krishnadevaraya was the Portuguese visit to San Thome and the other places in the Coramandal Coast[147]. Gasper Cornea, who was in India between AD 1512 and 1561 leaves an account of the Portuguese connection with the San Thome. According to him, Diago Fernandes and Bastia Fernandes visited San Thome *via* Pulicat by about AD 1517. Thus, from the end of the first quarter of the 16 Century, Pulicat was visited by the Portuguese.

One of Krishnadevaraya's inscriptions at Kunnathur indicates that a village in Kulottunga Cholanadu in Chandragirirajya was given as gift to Saluvanayakkar Sellappar, son of Tirukkalaindan Bhatta, a Devakani of the temple of Tiruvekambam Udaiya Nayinar at Kancheepuram. This Sellappa who is mentioned in the inscriptions of Kunnathur and Mangadu was a powerful and loyal chief of Krishnadevaraya and was incharge of the Tamil province of Vijayanagar empire[148].

Achyutadevaraya (AD 1530-1542)

When Krishnadevaraya was in his death bed, he nominated his brother Achyutaraya to be his successor[149]. A record at Kanchi dated AD 1533 states that soon after his coronation, the king directed his local agent Kanchi, Saluva Nayaka, to distribute his gifts of villages equally between the temples of Varadaraja and Ekambaresvarar in the city of Kancheepuram in Chandragirirajya. But, the latter failed in his trust and allotted more to the Siva temples. When this irregularity was brought to the notice of the king while he was at Kanchi, he ordered a revised allocation to be made and the necessary documents drawn up in his presence. An earlier record of the year AD 1532 states that Achyutaraya visited Sri Varadarajaswamy temple in company of his wife Varada devi Amman and his son Kumara Venkatadri. *Achyutarayabhyudayam*, a sanskrit historical poem narrates an incident that Achyuta in the course of his expedition to the Tamil country to quell the rebellious Governor Sellappa, who had been incharge of Tamil country of the Vijayanagar empire since his father Krishnadevaraya's period, visited holy places like Tirupathi, Kalahasti and from there, proceeded with his army to Kanchi. While at Kanchi, several forest chiefs (Kiratas) waited upon him with tribute and presents. Accompanied by them, he proceeded further south and went to Tiruvannamalai. After worshipping the God of the place, he entered the Chola country and, after a few day's march, reached Srirangam. Having stayed there for some time, he intended proceeding further on his expedition, when one of his officers told him that it was not necessary for the king to go against a small chief like Sellappa and requested that he might be entrusted with the expedition. Sellappa referred to in the poem was none other than Saluva Nayakar, who served as Governor of Tamil provinces under Krishnadevaraya. He was probably a native of Kancheepuram[150].

This Sellappa rebelled against the Central Government and to quell this rebellion Achyuta let his army towards South. But, when Achyuta's forces entered deep into Tamil Nadu chasing the rebel Governor, he fled to Tiruvadirajya. He was pursued even there by Achyuta's brother-in-law. He defeated the local king who gave protection to Sellappa and brought both of them prisoners. The concluding years of the Achyuta's reign was marked with confusion and troubles, as there were infights among the subordinates and the central authorities.

Achyuta died in about AD 1541 and was succeeded by his son Venkata-I, but a few months after his accession, he was murdered by his maternal uncle Salakaraju Tirumala. The latter's tyrannical rule was cut short by Sadasiva.

Sadasiva (AD. 1542-1576)

Sadasiva was a weak monarch and hence, his able Minister Ramaraya became the defacto ruler in whose hands the emperor was a mere puppet and even a prisioner. But the great power that he wielded and his interference in the affairs of the Sultanates of Deccan alienated the latter and brought about the disastrous battle of Talikotta in AD 1565 in which the Vijayanagar army was routed out and Ramaraya was captured and put to death. But, Sadasivaraya, the puppet king and Ramaraya's brother Tirumala escaped.

In some inscriptions that belong to the period of Sadasivaraya in Sri Varadarajaswamy temple, Kancheepuram, mentions have been made about the chieftains and deputies of the Vijayanagar empire who has associations with the district. These deputies or chieftain belonged to the Royal Family. A few of them is listed below :

1. *Matli Varadaraju* :- Son-in-law of Krishnadevaraya. He made cash award to Sri Varadarajaswamy Temple, Kancheepuram.
2. *Surappa Nayaka* :- Also known as Adaippam Surappa Nayakka. An agent of Sadasivaraya for Tiruvadinadu (present South Arcot and Tiruvannamalai Sambuvaraya districts).
3. *Tiruppathiraja* :- He gave a grant to the temple for the merit of his parents Mahamandaleswara Chinnayya deva Maharaja and Akkamma. Probably, the former is to be identified with Chinna Timmayyadeva - Maharaja, the third son of Pottapi Timmaraja of the Aravidu family who was incharge of the Chandragirirajya.
4. *Ramaraju Chinna Timmaiya deva Maharaja* :- A record dated AD 1549 says that he was to conduct all charities. His agents Gopinayaningaru gave gifts in his merits. His two Dalavays, Kuppa Nayakkar and Timmaraja, also gave gifts.
5. *Dalavay Timmaraju* :- He was an agent under Mahamandaleswara - Ramaraja Chinna Timmaraja who had his headquarters at Sengalinirpatru Sirmai (the modern Chengalpattu). He gave a village in his province as gift to Sri Varadarajaswamy temple.
6. *Ramaraja, son of Mahamandaleswara Chikkayaraja of Aravidu* :- As the name itself implies, he belonged to Aravidu family. He is stated to have been incharge of the conduct of annual festivals at Kancheepuram. This record is datable to AD. 1558.

Tirumala (AD 1570-1571)

Though the battle of Talaikota rendered the city of Vijayanagar and the empire utterly devastated, the imperial authority continued to be good force in South Indian politics for another half a century.

Tirumala attempted to re-establish the capital of Vijayanagar but failed because the Regent of Sadasiva shifted his capital from Vijayanagar to Penukonda in AD 1567. After three years, king Sadasiva was killed by Tirumala's son. Then, Tirumala usurped the throne and became the emperor. He was the first ruler of the Aravidu line of kings. He tactily approved the independence of the Nayaks of outh and made them friends. The Udayars of Mysore, and the Nayaks of Vellore and Keladi still owed allegiance as before. He set-up each of his three sons as Viceroys over a linguistic area for general control and supervision. His youngest son Venkatapathi was sent as the Viceroy for the Tamil country to which the capital was Chandragiri[151]. Tirumala's work restored the empire, though in a truncated form and prolonged its life for about a century.

Sriranga-I (AD 1572-1585)

Sriranga-I began to rule in 1572 though his father continued to live in retirement for some six years longer. His inscriptions are found in Kancheepuram, Kunnathur and other places in the district.

The epigraph from Kunnathur records the gift of land at Kunnathur to the Talasayanaperumal temple at Kadalmallai (Mahabalipuram) for the merit of the King's (Sriranga's) brother Venkata-II by the General Gobburi Tirumalai Nayakkar. Another inscription in Triplicane, refers to one Tirumala Nayanagaru, as the General of Venkata-II. Perhaps both Goburi Tirumalai Nayyakkar of Kunnathur inscription and Tirumalai Nayanagaru of Triplicane inscription were, one and the same person, who was incharge of the Tamil Country up to AD 1586[152]. Sriranga's reign witnessed some more incursions of the Muslims into the Vijayanagar Kingdom. The territory north of Penugonda was occupied by the Sultan of Bijapur, while the province of Udayagiri was conquered by the Sutlan of Golconda. The capital Penugonda itself came to be threatened. In the midst of these trying circumstances, Sriranga died in AD 1585 and was succeeded by his younger brother Venkata-II.

Venkata-II (AD 1586-1614)

Venkata-II, who reigned about 28 years revived the past glory of the empire to a certain extent. He had his capital at Chandragiri. His association with the district may be studied with the help of his inscriptions found in Kancheepuram, Kunnathur, Mangadu and Tirunirmalai. He recovered many of the territories in Deccan lost to the Muslims. From 1606, Vellore became his second capital[153].

There arose a civil war within the empire which engaged much of Venkata's time and energy. In the Tamil Country too, Venkata faced a revolt headed by Lingama Nayaka of Vellore. Venkata gave the Perumpedu Simai (Chengalpattu and Madurantakam taluks) to one Yachama Nayudu as his *amaram*.

Uttiramerur Battle

Yachama came into clash with Nagama of Uttiramerur, who was a subordinate to Lingama. In the fight between Yachama and Nagama, the latter was helped by Lingama and the Nayaks of Gingee, Thanjavur and Madurai.

It is said that Lingama and his subordinate, Nagama collected a large army consisting of 100 elephants, 500 pairs of horses, 10,000 archers and 20,000 infantry all under the command of Davulu Papa Nayudu. With this formidable force, Davula Papa marched towards Uttiramerur and besieged the fort on 31 May 1601. But, Yachama had the imperial support and it enabled him to defeat the forces of Lingama and Nagama. Davulu Papa was slain in the battle[154].

Another important historical event that took place during the time of Venkata-II was the establishment of the Dutch settlement at Pulicat. They obtained necessary permission from Venkata-II to carry on their trade in the small coastal villages. They built a fort *Geldria* there in AD 1610[155]. The growing commercial influence of the Dutch in Pulicat was resented by the Protuguese who had their trade settlement at San Thome. The jealousy of the Portuguese led them to take arms against the Dutch in Pulicat about AD 1612-13. In the attack, the Dutch were expelled from their fort, though they managed to re-capture it in AD 1614. After this, the Portuguese gave up their attempts to oust the Dutch from Pulicat though the rivalry continued[156].

The English at Pulicat, Armagon and Madraspatam

Venkata-II died in AD 1614. His death was followed by a civil war in the royal family in which Sriranga, the rightful heir to Venkata-II was put to death by the rebels. But, the loyalists under the leadership of Yachama crowned Ramadeva, the son of the deceased Sriranga. Ramadeva ruled till his death in 1630. During his rule, his father-in-law Ethiraja became the master of Pulicat on the east-coast where there was the Dutch settlement since 1610. It was during the Rama deva's rule that the English, who made a futile attempt to land at Pulicat in 1611, was admitted to trade in the coastal village in 1623, by a treaty with the Dutch[157]. The English who had already established their factories at Surat and Masulippattinam had looked for a new and better place to house their factory. It was at this time, that they planned to have a joint trade with the Dutch at Pulicat. But, after the establishment of the English factory at Pulicat in 1621, the position was found to be a difficult one. The correspondence between the Agents of the

English Company and the Directors of the Company in England, which has been published by William Foster shows clearly the many hardships and inconveniences that the English faced at Pulicat[158].

The hardships included the non-cooperation of the Dutch and the heavy capital needed for the investment in the cloth trade. Consequently, the English left for Masulippattinam abandoning Pulicat in 1623. The English interest in the East Coast never faded away. In 1626, the English obtained the grant of a small piece of land at Armagon, about 50 km. north of Pulicat. A fort and a factory were erected there. But, Armagon proved to be a very unsuitable place for carrying out their trade. The local Nayak chieftain was belligerent towards the English and the place lacked raw material for the profession. The fort built there, also was getting dilapidated and considering these disadvantages, the Directors of the English Company issued orders in 1638-39 to abandon Armagon. Thomas Ivie who was then the chief at Masulippattinam authorised Francis day, the chief at Armagon, to undertake an exploration of the coast to find out a suitable place. A Dutch letter of the times from Pulicat informs us that Francis Day was trying to obtain Pondicherry to set up English Factory. But, this proposal was given up as Damrala Venkatappa, an influential local Chieftain of Venkata-III (1630-1642) the successor of Ramadeva to the Vijayanagar throne, offered Madraspatam, the present Madras, to the English for establishing their settlement.

Around AD 1630, the Vijayanagar Empire became crippled in territorial extent and power. The subordinates and viceroys became independent powers eschewing their allegiance to the weak central government. Venkata-III became the king of the territory comprising Kancheepuram, Poonamallee, Chengalpattu and the modern city of Madras up to Wanthavasi. As already stated, Venkata-III was assisted in his administration by two able generals Damralá Venkata and Damrala Ayyappa. These two brothers were the sons of Chenna, the famous general of Venkata-II and they belonged tò Kalahasti. During Venkata-III's time, Damrala Venkata and Damrala Ayyappa were incharge of Wanthavasi and Poonamallee respectively and as much wielded great influence with the king. It was these two Damrala brothers who offered to the English the small tract on the coast called Madrasapatam for their settlement (1639). The English greatefully refer to Damrala Venkatappa Nayaka, the elder and the more influential of the brothers as the "Lord General" of Carnatic and "Grand Vazier".

Sriranga-III

On the death of Venkata-III in 1642, his nephew Sriranga treacherously occupied the imperial throne much against the wishes of many Chieftains including the Damrala brothers.

On his accession, Sriranga-III dismissed Damrala Venkatappa from his position and he openly intrigued with the Sultan of Golconda against his own overlord. The Golconda army had advanced near Pulicat and sieged

the village. However, Sriranga mustered courage and drove back the Golconda army. The Dutch records of the year mention the reinstatement of Damrala. Venkatappa to his position[159]. The condition of South India in about 1642-43 is very well summed up in a letter of *Fort St. George*, dated January 4, 1643. *This country being all in broils, the old king of Karnataka dead. So is the Naik of Armagon, whose country is all in the hands of the Moors and who will ere long by all likelihood be masters of all this country for our Naik (Venkatappa) not finding the respect from the new king (Sriranga-III) as he expected did make proper to assist the Moors; but ere he could bring his treason about, it was discovered and he was apprehended by the king, who had seized great part of his country; but, we believe that we will be forced suddenly to restore it again and release him for our Nayak's brother and kinsmen are levying an army for his rescue, who, with the help of Moors on the other side will force his liberty or ruin the whole kingdom*[160]. The mention of Moors in the letter is obviously a reference to the Golconda army which was advancing but was driven back by Sriranga-III. It is clear from the letter that Damrala Venkatappa was disgraced. Sriranga seized the power and authority hitherto with Venkatappa and conferred them upon the one Mallai Chetty *alias* Chenna Chetty, an Indian merchant; who had been a broker to the Dutch at Pulicat[161]. Because of his attachment with the Dutch, Mallai Chetty, was not in the good books of the English. But, as soon as Mallai, by a curious turn of events, fell out with the Dutch, he was warmly supported by the English. Sriranga had ordered a general taking over of all the goods belonging to the Dutch in the hands of the Hindu merchants within his dominions and Mallai, as the local feudatory, got them collected at a place, not far away from Madras. The goods were sold on behlaf of the emperor and the English showed their friendship for Mallai by purchasing these goods when the Dutch protested against this confiscation. Sriranga ordered Mallai to besiege Pulicat, - the Dutch, - in the district. The English utilised this moment to win the friendship of Sriranga further. They even extended their assistance to the Pulicat siege. The king also favoured the English and their settlement was brought under his direct control which, hitherto, had been within the jurisdiction of the Poonamallee Nayak. The English were given the right to administer their own law and order and justice within their settlement.

Meanwhile, the Bijapur and Golconda forces jointly invaded Sriranga's territory which compelled the king to lift the siege of Pulicat, as the forces were withdrawn to resist the Muslim invasion. A letter dated 21 January 1645-46 from Fort Saint George to Surat reads thus :

"Eversince the siege of Pulicat, which was begun on the 12th August last, the king hath been in wars with the king of Vizapore (Bijapur) and civil wars with three of his great Ngues (Naiks); .... And now the king of Golcondak (Golconda) hath sent his General Meir Gumlak (Mir Jumla) with a great army to oppose this king, who is advanced to the Jantues (Hindu)

country, where the king hath sent his Mallay, who hath got together 50,000 soldiers a report says, whereof 3000, he sent for from Pulla catt (Pulicat) to keep the Mores (Muslims) from interfering upon this king's country"[162].

But, even the troops under Mallai from Pulicat could not stem the tide of the Muslim invasion. By about 1645, the combined forces of Bijapur and Golconda besieged Vellore, the seat of Sriranga's kingdom. In the war followed, Sriranga was defeated decisively and his palace was occupied by the victorious Muslim forces. Sriranga fled the battlefield, leaving the defence operation to Mallai. Mallai surrendered to Mir Jumla and saved himself and his family.

The invasion of Muslim forces into the vicinity of Madras is very well gleaned from the letters of Fort Saint George written in 1646 and 1647. Thus, a letter dated January 4, 1647 reports that the Golconda forces under Mir Jumla *hath taken the Government of Pulicat and San Thome setting the country all in order as he goeth along and is now within two days march of the kings court and nobody comes to oppose him, the famine having almost destroyed the kingdom......*[163]

Another letter dated 9 October 1647 informs us that the General of the King of Golconda *hath almost conquered this kingdom and reigneth as king under the title Annabob (Nawabs). The same letter notes with satisfaction that Mir Jumla acted with great considerateness towards the English and earned their allegiance and assistance.*

Sriranga who took his flight, re-captured his royal residence at Vellore with the help of his royal subordinate, the Sivappa Nayak of Ikkeri. There are inscriptions belonging to Sriranga from 1645 to 1649 which attest the continuation of his reign. It is inferred that Sriranga continued to rule all his territory except Pulicat and Poonamallee provinces within which the factories of the Protuguese, the Dutch and the English lay. These, it would seem, continued in the possession of Mr. Jumla, the Golconda General who appears to have called himself the Nawab of the Carnatic from about the close of 1647[164]. In 1645, Sriranga retired to Tirupathi and that was the end of the Vijayanagar Kingdom[165].

The district under Golconda Rule

By about 1672, the supremacy of the Golconda power became established in the Tondaimandalam or Carnatic region. Abdulla Kutub Shah, the Sultan of Golconda, even issued farman (royal order) to East India Company confirming the privileges given to them earlier. At this time, Kanchipuram formed part of the province of Poonamallee, which was directly under a Hindu officer named Podella Lingappa[166]. This Hindu Officer was the nephew of Madanna, - a Brahmin Minister in the Golconda Court. He had his headquarters at Kanchipuram too for sometime. He levied great taxes upon the English people who had their factories in the territories which

were within his jurisdictions. At one point, the English thought of shifting their factories to Ginjee which did not come under the Golconda rule[167]. In 1674, Abdul Hassan Kutup Shah, the last Golconda ruler came to power, being an inefficient ruler, he left the administration with his ministers and subordinate officers. Lingappa, the Golconda Governor in Poonamallee also assumed vast powers and came into clash with the Europeans in his territory.

The Mahratta army at Kanchi, 1676

With 20,000 horses 40,000 infantry soldiers Mahratta ruler Shivaji started towards the end of AD, 1676 on the Carnatic Campaign[168]. He met Kutup Shah of Golconda and assured him his sincerity towards him. Shivaji left Hyderabad in 1677 and passed through Tirupati and Kalahasti and halted at Pedda Polam (Periyapalayam in the district) for sometime. He had already sent an advanced detachment of 5000 Cavalry through Kanchipuram to Ginjee, besieged Vellore and proceeded up to Thanjavur where he left his brother Ekoji *alias* Venkaji, to rule the territory[169]. In August 1678 Abdulla Khan, the Commander of the Bijapur forces in the Vellore castle surrendered to Shivaji's force after the siege. In 1678, Shivaji's forces were at Kanchipuram on their way to capture Poonamallee, the headquarters of Lingappa.

The Fort Saint George Diary dated 21 August 1678 reads thus : *Yesterday there came intelligence from Kanchipuram (which is the chief city of these parts, about 40 miles distance), that there was 1000 or 1500 or Sevajee's horsemen under the command of Santojee, his brother, which appeared before the place. Wherefore the inhabitants were put into great fears, thinking the town would be taken and plundered. And they reported also that those horses, and with other forces, now intended to proceed further into the king of Golconda's country and to take Punimallee castle, about 10 miles in land from us. But, this day came under other persons from Kanchipuram who reported that those horses of Sevajee about 1000 came thither in pursuit of some Vijapore fort that were intended to relieve and succour Vellore castle which hath been* besieged by the Sevajee's forces these 14 months. The said castle of Vellore is now surrendered to Sevajee's forces"[170].

The possible invasion of Shivajee's forces terrorised the English at Madras. Even the Mahratta ruler issued order to sack Sadras, Pulicat and Madras. But, somehow, the Mahratta ruler changed his plan and turned towards Mysore[171]. All his further designs of conquest came to a sudden halt by his premature death in 1680. He was succeeded by his son Sambajee.

Moghuls in the district

Just as the old Hindu State of Vijayanagar succumbed to the Golconda army forty years before, the effete dynasty of the Kutup Shahs now fell before the victorious Moghuls. Aurengazeb, the Moghul emperor had determined to conquer and annex the two kindgoms of Golconda and Bijapur. In the

years 1686 and 1687, Aurangazeb invaded Bijapur and Golconda and conquered them. The Moghul army continued its march down to the Carnatic. In October 1687, news reached the *Fort St. George* that the Golconda stronghold had yielded after protracted siege and the king was a prisoner. The next few days brought the news that the Moghul forces had come as far south as Kancheepuram and that the Moghul flag was hoisted on the fort of Poonamalli, as the Hindu Chief of Poonammalli accepted the overlordship of Aurangazeb[172].

During this time, one Potty Cawn (Fath Khan) was appointed Subedar of the area (which is now Chengalpattu-MGR district) with headquarters at Chengalpattu[173]. The Moghul army penetrated further south. But Sambaji the son and successor of Shivajee, took up army against the Moghuls in the Deccan and prepared to resist their incursions into Ginjee territory. He sent a force into the Carnatic under his General Santoji Rau to fight the Moghuls. The Mahratta army consisted of 2000 horses and 5000 footmen and this war did considerable damage to the city of Kanchi. Late in 1689, Aurangazeb captured Sambaji, the Mahratta King and tortured him to death. Sambaji's brother Raja Ram Maharaja was made the king of the Mahrattas at Ginjee.

Aurangazeb subdued all the Deccan powers of Golconda, Bijapur and the Marathas and became supreme in South India up to Tiruchirappalli Zulfikar Khan, an able general of Aurangazeb was appointed as the Chief of the Deccan provinces. But, the Nayak of Gingee who ruled the districts south of Chengalpattu from the strong fortress of Ginjee was found not alligiant towards the Central Moghul power. Zulfikar Khan as directed by Aurangazeb proceeded towards Ginjee besieged the fortress. The siege ended favourable to Zulfikar Khan in 1698[174]. The English at Madras assisted Zulfikar Khan "with power and services". While the siege was on, the Moghul general issued `firmans' (royal order) confirming their possession of Madras and adding Egmore and Purasawakkam to their hold[175].

The district under the Nawabs of the Carnatic, the Viceroys of the Moghuls

With the fall of Ginjee (1698), the Southern provinces of the Moghul was established with Zulfikar Khan as the Chief. He was called the Nawab of the Carnatic. He is said to be the founder of the Arcot Nawabship. As Zulfikar's services were needed somewhere, he went to Delhi leaving behind him his able general Daud Khan to succeed him as the Nawab. Daud Khan resided for sometime in Ginjee and then in Arcot which later became the capital of the Carnatic Nawabs. In 1710 his own Civil Officer Sayyad Muzafar became the Nawab with the name of Sadat Ullakhan. He is considered to be the first regular and acknowledged Nawab of the Carnatic. But this distinction was objected to by the author of the Chengalpattu - Manual[176] according to whom, he did not differ in any respect to his predecessors and the only distinction was that he gave hereditary character to the office of the Nawab.

The whole of 17th century was indeed an unfortunate period in the history of the Carnatic regions. It was characterised by political uncertainty, instability and consequent break in the administration of the land; constant warfare, the extortions of the local Nayaks and each victor trying to exploit the maximum he could within his short time, plunged the people in great misery and poverty[177]. As Crole remarks, *there was no one to take up their (people's) cause. They silently suffered and not a record remains among them of the horrors of that time*[178].

This horror was never greater than on the eve of the Moghul invasion of South India in 1688, as already mentioned. Kancheepuram and other important towns of South India felt the shock of iconoclastic zeal of Aurangazeb. His zeal for destroying the Hindu temples and idols seems to have been already widely known at Kanchipuram[179]. Even the images in the temples of the town were removed to safer places. These images were brought back after the return of normalcy during the reign of Sadat-Ullakhan, the Nawab of Arcot. Under him and his successor Dost Ali for a period of almost 30 years (1710-1740), there was some peace and good administration in the Carnatic. He ruled up to 1732.

Dost Ali Khan 1732-1740

Sadat-Ulla Khan's brother Dost Ali Khan became Nawab in 1732 and ruled the Arcot region for eight years. It was by this time, the Maharattas, rose against the Mughals. The local officers appointed by the Government were particular only in realising the taxes and did nothing to improve irrigation and welfare of the people. The result inevitable in the Carnatic followed. The tanks fell in ruins. They became incapable, for want of repair, of retaining the water necessary for cultivation. The horrors of famine succeeded the devastations of war and misrule[180].

Thanjavur region was under the Mahratta rule sicne 1676. This Mahratta rule was often disturbed by the Nawabs of Arcot and eventually Pratap Singh, the Mahratta ruler in Tanjore was pensioned off and a Muhammedan deputy was placed to take care of the kingdom. It was at this time, that the southern states requisitioned the help of Maharaja Sahu of Satara, who incensed at the atrocities committed by the Muhammadans in the Thanjavur Kingdom ruled by the collateral branch of his family, despatched an army of 40 to 50 thousand under Rahoji Bhonsle, to wreak vengeance on the wrong doers. This huge Mahratta army advanced into the Carnatic and at the Damal Cheri pass, defeated and slew Nawab Dost Ali Khan. Afterwards Raghoji Bhonsle made peace with the Nawab's son Safdar Ali and recognised him as the new Nawab in August 1740[181].

Safdar Ali Khan - 1740-1742

The English sent presents to Raghoji Bhonsle and protected their interests. But, total insecurity prevailed in the district, led the Nawab Safdar Ali to send his young son and wife to Chennai for safety under the British[182]. Shortly afterwards (1742), the Nawab was assassinated in a scuffle at the instigation of a treacherous relation of his, Murtaza Ali, - the Killedar of Vellore.

Muhammad Sayid 1742-1744

But the army proclaimed his young son Muhammed Sayid as the Nawab of the Carnatic in 1742 and the young Nawab was supported by the British. The young Nawab recompensed the English for the hospitality, they showed him by granting them as a free gift of five villages, Vepery, Perambur, Puduppakkam, Ernavore and Sadayankuppam as well as the right to coin Arcot rupees at their mint, to be set up in Chintadripettai.

Nizam's intervention in Arcot affairs

The Great Nizam-Ul-Mulk having returned from Delhi, now resolved to settle the Carnatic and its affairs in person with a view to restore order and re-establish his supremacy. He arrived at Arcot with a large army and turned out the Mahrattas from Tiruchirappalli. He struck terror to the petty rulers in the Carnatic. The boy Nawab visited the Nizam who promised to consider his claims to the Nawabship when he would become a major and appointed a Diwan to Arcot. The first appointed Diwan died suddenly and his place was given to Anwardeen Khan.

Anwardeen Khan

Soon after Anwardeen came to Arcot, the boy prince was killed in an affray. Anwardeen, the new Nawab, though generally suspected of having had a hand in the crime of killing the boy Nawab, was absolved from all blame and confirmed in his office by the Nizam in 1744. Anwardeen thus superseded the old Navayat family of Sadatullah which had been in power for over 30 years. Anwardeen's rule was unpopular at first and greatly disliked by the adherents of the Old family.

Beginning of the Carnatic Wars

Morse became the Governor or East India Company at Chennai in 1744. Dupleix, the French Governor at Pondicherry had written to Morse earlier that peace should be preserved between the two nations in the Indian Ocean. But the English squadron had already been despatched to India; and it actually reached Madras in August 1745. Nawab Anwardeen was alarmed at the prospect of a war between Madras and Pondicherry and he wrote to Morse to forbid hostilities with the French, to which he replied that he would not be the first to disobey the command. The Nawab himself subsequently came to San Thome and received the English very cordially. The English fleet might have easily attacked and captured Pondicherry but it

did not do so[183]. It retired, on the outbreak of the monsoon, to the Archipclago. Meanwhile De La Bourdonnais, an interpid soldier and Governor of Bourban, came to the rescue of Dupleix with a fleet. He fought an indecisive engagement with the English fleet on the coast. The English fleet hovered for sometime in the neighbourhood of Madras and then sailed away to Bengal, leaving the English settlement in Madras in lurch. Dupleix and De La Bourdonnais succeeded in occupying Madras and the city was under the French control till August 1749, when it was restored to the British as per the peace Treaty of Aix-la-Chapell.

Adayar Battle, November 1746[184]

Soon after the French occupation of Madras, Nawab - Anwaruddin resolved to make good his claim to the city, by force and sent his son Maphuz Khan, to seize the surrounding country and prevent all ingress into Madras. In October 1746, when the Nawab's troops, cut off the garrison's water supply, a French force sallied out of the Fort and attacked the enemy. The result was a battle at Adayar in November 1746 in which the Nawab's army was defeated. This easy victory of the French over the numerous army of the Nawab made a great impression on the popular mind of the strength of European Artillery and discipline. The battle reversed the position of the Nawab and the French Governor and transferred the prestige and the morale from the Muhammadans to the European settlers[185].

Chanda Saheb, Nawab Dost Ali Khan's son-in-law had an eye on the Nawab's throne. When he was assisting his Father-in-law in Ambur battle (1740), he was taken prisoner by the Marathas. Later, he was released by the intervention of Dupleix. By this time, there were two claimants for the Nizamship of Hyderabad. When Nizam-Ul-Mulk died (1748), his brother Nasar Jung was to succeed him. But, it was opposed by a grandson of Nizam-Ul-Mulk, Muzaffar Jung. Chanda Saheb supported the claim of Muzaffar Jung to the Nizamship of Hyderabad and both Muzaffar Jung and Chanda Saheb invaded Arcot. The invasion was supported by the French at Pondicherry. The army met the Nawab's forces at Ambur on 3 August 1749 and in the battle that took place, Anwardeen was killed. Chanda Saheb was declared the Nawab of Arcot. Meanwhile, the British forces supported Muhammed Ali, the son of Anwardeen who was slain in the Ambur battle and recognised Muhammed Ali as the Nawab of Arcot. Even the British army fought against the Portuguese, which won in occupation of San Thome and Mylapore, on behalf of Muhammed Ali, captured these places and got a *firman* from the young Nawab (2nd October 1749) to occupy the two places. The British hurriedly did this, fearing that Chanda Saheb who was recognised by Dupleix as the Nawab of Carnatic, might transfer the places to the French.

In the meantime, Nazar Jung appeared with a large army at Valudavur near Pondicherry and with the British help, defeated Muzafar Jung and the French. He then put Muzafar Jung his rival, in irons, declared himself as the Subedar of the Deccan and appointed Muhammed-Ali, as the Nawab of Arcot.

Capture of Arcot by Clive

Robert Clive, who rose to a high position in the East India Company hierarchy, from an ordinary writer, induced the Governor of Fort St. David (Cuddalore) to agree to his making a diversion by an attack on Chanda Saheb's possessions in Arcot. Accordingly, on 29 August 1751 Clive halted at Kancheepuram. Then Clive marched into Arcot to find the fort abandoned by the enemy. The occupation of Arcot had in the meantime produced the desired effect. Chanda Sahib sent his son, Raja Sahib, with 4000 Indian and 150 French troops. The defence of Arcot ended in the retreat of Raja Sahib. When the English force under Lieutenant Innes reached as far as Tiruvallur, they were surrounded by the troops of Raja Sahib. Anyhow, the English managed to succeed at heavy cost. They were obliged to retreat to the fort of Poonamallee as they had no canons. Eventually, Lieutenant Innes' party reached Arcot under the command of Captain Kilpatrick. Clive, after resting for two or three days, left Kilpatrick in command at Arcot and set out to reduce Kancheepuram. Clive inflicted a crushing defeat on the enemy whose troops fled in all directions. These successes regained for Muhammad Ali a large portion of the Carnatic[186].

Clive then returned to Fort St. David. The French and Chanda Sahib had to give up the siege of the Fort. Clive stormed the French posts at various places. Finally, the greater part of Chanda Sahib army deserted him and joined the English. Chanda Sahib was captured by the Commander of the Thanjavur troops which were assisting the English. The General at Thanjavur brutally murdered Chanda Sahib. The French and others capitulated to the operations took place in this district.

Abortive Conference in Sadras

The year 1754 opened with a conference at Sadras. The English deputies were Palk and Vansittart, those of the French, Father Lavaur Superior of the French Jesuits in India, M. Kerjean, Dupleix's nephew, and M. Basseret, a member of Council at Pondicherry. The basis of the English proposals was the acknowledgement of their protege, Muhammad Ali as Nawab. The French demanded that Salabat Jang should be recognised as Subedar of the Deccan. The compromises which they arrived at, was the recognition by the English of Salabat Jang as Nizam and by the French of Muhammad Ali in the Nawabship.

Capture of Uttiramerur by the French

A few months after the conference, Mahfuz Khan with his headquarters at Kancheepuram was bargaining with the English for money to proceed to the assistance of his brother, Muhammad Ali at Tiruchirappalli. Dupleix took the chance and directed the troops at Ginjee to take the fort of Uttiramerur. The French succeeded. Uttiramerur was, however, recaptured by Mahfuz Khan and after the French troops had run away in the panic to Ginjee, he returned to Kancheepuram. Soon after Godeheu arrived from Europe and relieved Dupleix.

English Attempt to re-capture Uttiramerur

The year 1756 brought rumours of a threatened renewal of the war between France and England and found the Government of Madras unprepared to take active measures. In the meantime, Ensign Banatyne who commanded at Karunguli made a sudden descent on the French at Uttiramerur. No sooner, however, had he departed, then the garrison left in it by him, were compelled to evacuate the fort, owing to the return of the fugitive French Garrison with 500 sepoys sent by the native Commandant of the fort at Vandhavashi. Colonel Adlercorn now proceeded to Uttiramerur and the French troops evacuated it at his approach. He then marched to Wandiwash. After storming Wandiwash, he retired to Uttiramerur on receiving news of the advance of a French force. The French under Saubinet at once re-occupied Uttiramerur and then proceeded to Kancheepuram. But the French were beaten off and at midnight, the French retired to Uttiramerur, leaving Kancheepuram in flames. The evil effects of that incursion were felt far beyond Kancheepuram. The government then sent Adlercorn back again. He re-occupied Uttiramerur from which the French retired. From there, he advanced to Wandiwash before which the latter lay strongly entrenched. The English marched to Kanchipuram. As soon as the French at Wandiwash saw the English settled down in Cantonments at Kanchipuram, they took possession of Uttiramerur[187].

Lally's Campaign in the district

On the 28 April 1758, Lally landed at Pondicherry and took office as Governor-General of the French possessions in India. As soon as he landed, he attacked the *Fort St. David.* After the fall of *Fort St. David.* the Governor at Madras wanted to strengthen Madras and resolved to call in every available man to aid in the resistance which had determined to make. In pursuance of these, and Karunguli, Chengalpattu, Kancheepuram together with Kaveripakkam and Arcot were finally evacuated. The French were very soon at work plundering the rich villages, - Salavakkam and Kancheepuram. Before advancing on Arcot, Lally had reached the country lying south of the Palar, (the Madurantakam taluk), and had visited in person the forts of Allampara in the south and Karunguli. The timely arrival of troops from

England helped the Government of Madras to re-occupy Chengalpattu. Lally now began to concentrate his forces on Karunguli, Salavakkam and Kancheepuram. Lally arrived at Chengalpattu on the 4 December 1758. On his way to Madras, he attacked Poonamallee and drove Ensign Crowley, who commanded the fort. Colonel Murphy was deputed by Lally to reduce Poonamallee. Crowley at first refused to surrender. Finally, he abandoned the fort at dead of night, marched towards Madras and joined the garrison at Fort St. George with his five companies of troops[188].

Lally entered the Black Town un-opposed. Major Brereton was supporting him with 100 men. The English were thrown into confusion and they retired to the Fort, having lost some men in the battle as prisoners. The French loss too was about the same. Lally's batteries were completed and he opened fire from the north on the weakest part of *Fort St. George.* Captain Preston, with Muhammad Yusuf, made ample use of the force left there by harassing the rear of the French and cutting off supplies from Pondicherry. In this way, the French lost their only mortar which was taken between Sadras and Kovalam by a detachment from Chengalpattu under Lieutenant Airy. Lally sent a force against Major Calliaud. The struggle between Lally and Major Calliaud resulted in the siege of Madras and with it, reached the turning point of French ascendancy in the Carnatic[189].

On the night of 2 January 1759, Lally opened fire and the Fort at Sadras had been surprised and taken by the French. Meantime, captain Calliaud encamped on the Choultry Plain, where the English began to collect a force to take the field. On the 15 March, they had arrived at a spot at a distance of seven miles from Kancheepuram, where Lally had thrown his troops on hearing the movement of the English. Lally left Soupire in command with instructions not to risk a general engagement. Colonel Lawrence, after a vain attempt to bring on a battle in the open plain, went back to Chennai and resigned the command on the ground of physical infirmity and age. The command was taken by Major Brereton, with Major Brereton and Major Calliaud in separate command of the Company's troops. They were both capable officers, but they were compelled to sit inactive before Kancheepuram. It was impossible to attack the French in that large struggling town with any hope of success. In the meantime, Preston at Chengalpattu detached Lieutenant Airy with seven companies of sepoys to surprise the fort of Karunguli which was reported to be held by very weak French garrison. For some unexplained cause, the sepoys wavered and fled losing 25 men in their precipitate retreat.

The Marathas had during the siege laid inactive near the Pass of Damalcheri in the Eastern Ghats. The English tried to purchase their assistance against the French at that juncture. Their leader Gopal Rao put a claim for 12 lakh of rupees as compensation for expenses which he had incurred in preparing a force to assist the English. The English agreed to

pay him the money, if he would tear the French forces to pieces before they reached Pondicherry a sarcasm to which he responded by breathing threatenings of ruining the Company's possessions both on the east and west coasts. He did not yet comprehend the meaning of the independent attitude assumed by the people, who but shortly before had tremblingly paid the Maratha demand. He forthwith went south and offered his services to Lally. The latter for once took the advice of Deleyrit, the Civil Governor of Pondicherry and declined with thanks. Since Lally thought that the help of the Marathas was more likely to damage the rich and extensive territory under the Pondicherry Government than to hurt the English who then possessed a little country[190]. Muhammad Ali, the Nawab had come to Madras during the siege. Soon he found it very uncomfortable. He escaped by slip to Nagapattinam, from there he returned to his old quarters of Tiruchirappalli.

The district under the occupation of the French

The French and English had laid inactive for twenty two days. The whole country south of the Palar, including the then taluk of Madurantakam was in the hands of the French. Major Brereton, therefore, formed the prudent resolve of marching into the south. The English quitted their camp on the 1 April 1759 without any opposition from the French. On the 6, they took the possession on Wandiwash in North Arcot and began to throw up batteries against the fort. At the same time, Captain Breston seized Uttiramerur in order to keep the line of communication open between Wandiwash and Chengalpattu. Brereton, hearing that Soupire had retired at once, abandoned his attack on Wandiwash, and marched by forced journeys to Kancheepuram. Colonel Monson reached the town on the evening of the 15 April 1759 and determined to storm it next morning. A severe battle had been fought. Captain Stewart and Bannatyne the hero of 100 engagements round about Karunguli and Uttiramerur, Lieutenant Elliot and Ensign Hunter were killed. In the end, Kancheepuram was recovered. Lally himself, having exacted 40,000 rupees from the renter of Kaveripakkam and 10,000 rupees from Murtaz Ali of Vellore, encamped at a place about 5 miles from Kancheepuram. Monson marched his troops and made several attempts to bring on a general engagement. Lally was not confident of the temper of his troops and felt that his chances of success were remote. He, therefore, crossed the Palar in the direction of Wandiwash[191].

The English on their side put their troops into cantonments in Kancheepuram, Chengalpattu, Poonamallee and Sriperumbudur. Lally was in a difficult position. The Council at Madras determined to take advantage of Lally's difficulties and gave orders for an advance of the force at Kancheepuram against Wandiwash. Brereton had recovered and resumed the command of the British army. The night of the 29 September 1759 was fixed for the attack, but when the time came Major Gordon, was not to be found and his cowardice caused the repulse of the others. Lally who was at

Pondicherry was overjoyed. Brereton retired to Kancheepuram. Lally deputed Bussy with a force to join Basalat Jang who was then hovering with his troops over the Carnatic. The plan was to enlist his active aid against the English, by appointing him Nawab and thus create a diversion in the north of the district. Bussy with a small force set out from Arcot. The main body of the French troops retired to Wandiwash, after the fruitless attempt to engage the English. Soon after, the troops mutinied.

Success of the British over French

Colonel Sir Eyre Coote now arrived from England and was appointed to the Command at Madras. He proceeded to Kanchipuram where the main body of the army camped. The French force had been away to Tiruchirappalli. Coote resolved to take advantage of the absence of a part of a French force. Coote then made a feint on Arcot and sent Brereton to attack Tiruvattur in order to divert the attention of the enemy. Brereton arrived at Wandiwash on the 26 November 1759, stormed and at once began to throw up batteries against the fort. It was held by a Killadar, a relative of the late Chanda Sahib aided by a French garrison. Coote hearing of this success, proceeded to Wandiwash. A practicable breach was soon made and the fortress at last capitulated just as he was about to storm it. He then hastened to reduce Karunguli before the French could collect reinforcements. Coote's batteries opened on the 7th December, but the Commander, Colonel O' Kennelly, an Irishman of Lally's regiment refused to surrender. Unexpectedly a flag of truce appeared, and a capitulation was agreed to by which the French marched out of the Fort. Coote was forced to grant the terms requested. On the 13th, Coote marched back to Wandiwash and then on along the road towards Arcot encamping at a village called Papantangal to wait for the enemy's troops[192].

In the meantime, there arose competition between the French and English for the services of a cavalry under Morari Rao, a Mahratta Chief. The French secured the help and Madras was ravaged and desolated by those unrelenting horses. Coote's troops on the point of starvation returned to the fort. When Coote returned, he found that Lally and Bussy had joined their forces in the year 1759 and closed with a series of desultory skirmishes in the North Arcot District.

In 1760, Lally and Coote were bidding against each other for the services of 3000 Mahrattas under Innis Khan. The French offered ready money and secured the services of the Mahrattas. The two armies then marched down the river Palar on different sides. Coote was watching the movements by means of his cavalry. Lally entered Kancheepuram before Coote who was twenty-one miles off from that place. Coote at once set out for Kancheepuram but he arrived sometime after Lally had departed. A body of 1000 Mahrattas were at this time plundering all the country about Vandalur and Poonamallee and began to reduce the camp of the English.

The major mistake commited by Lally when, by dividing and weakening his forces, he lost Wandiwash and Karunguli was secretly acknowledged by himself and had seriously affected his prestige with the army. Bussy advised him to stop the siege. But, Lally did not wait and he suspected Bussy of designs against his reputation. He marched for Wandiwash leaving Bussy at Thiruvothiyur to watch the English. Coote started from Kancheepuram and on 17 January 1760 halted at Uttiramerur. In the meantime, Lally, having failed to recover Wandiwash, had opened fire upon it. Sending his heavy bagage to Karunguli for greater safety, Coote determined to march on Wandiwash, Lally, having further weakened his forces by the regular investment of the place. Coote twice ineffectually offered battle in the open. He-then marched towards the fort and occupied. Lally headed a charge of French cavalry against Coote's horses. In the end, the French fled[193].

Capture of Chengalpattu and Arcot by the British

Coote's next design was against the forts of Chengalpattu and Arcot, which surrendered in 1760. The French settlement at Karaikal was the next to fall. This was followed by the reduction of Ginjee, and Mahe and nothing was left of the French Empire in India except the mere trading factories at Calicut and Surat.

The acquisition of the District by the British

As detailed above, during the struggle between the British and the French for the mastery over the Carntic, Chengalpattu and many other places were the scene of constant fighting. Though the British fought against the French for protecting their own interest, they called it that they did it on behalf of the Nawab Muhammed Ali. Hence, for the services rendered to the Nawab and his father in the wars, Muhammed Ali granted the present Chengalpattu-MGR district as 'Jahir' to the British in 1760.

This grant of Jahir was confirmed by the Emperor Shah Alam at Delhi in 1763. Though acquired, the British leased this district to the Nawab until 1780[194].

Hyder Ali and Tipu Sultan

After the Carnatic wars, the district did not witness any battle until 1767 when Hyder Ali, the Mysore ruler invaded Madras. The British administration considered the rising powers of Hyder as a mere adventure. But, the British had to wage four major wars with Hyder and his equally brave son Tipu to establish their supremacy in the Carnatic. The wars in the history are known as first, second, Third and Fourth Mysore Wars.

Hyder's army twice revaged the district, once in 1768 and again in 1780. Pitched battles were fought at Pullalur, near Kancheepuram where the British embraced a crushing defeat at the hands of Mysore troops. But,

during the second Pullalur battle (1780), though English succeeded in making Hyder to re-treat, the Mysore army almost depopulated the district. The events of the wars related to the district are briefed below.

Chief events of the Anglo-Mysore Wars fought in the district

In 1767, the British concluded a treaty with the Nizam for the invasion of Mysore. The British forces were to unite with that of the Nizam's on the Northern Frontier of that province. The sudden change of policy was induced by the open espousal by Hyder Ali of the claim of Mahfuz khan, elder brother of Muhammad Ali to the Nawabship of Carnatic. The Nizam was bribed to side with Hyder for whom he openly declared, thus leaving the British commander colonel Joseph Smith to return to his own territory. Hyder advanced through the Chengam pass near Tiruvannamalai (North Arcot District) and drove the English back to Madras.

Tipu Sultan had been sent to ravage the places around Madras. He accordingly pillaged Santhome and the neighbouring villages and plundered the country houses of the Members of the council at the Mount. The Nizam concluded a treaty with the British and marched away to his own dominions. Towards the end of the year, Hyder again entered the Baramahal and Carnatic and reduced every place which had been wrested from him. Hyder after decoying Colonel Smith to a distance of 140 miles South of Madras despatched the bulk of his army inland by the Attur pass and took up his headquarters at the Little Mount. This war which had been provoked by the council of *Fort St. George* in breach of the orders and policy of the Court of Directors thus ended in a large increase to the debt of the company[195].

In March 1778, war again broke out between England and France. The French possession in India except Mahe had fallen into the hands of the British. It brought very serious consequences in its course. A number of French adventurers who were let loose on the native courts, did not fail to fan the flame of secret hatred against the compnay. The Mahrattas, the Nizam and Hyder formed a confederacy, the object of which was to drive the English out of India. Under the arrangements then concluded, the Nizam was to invade the Northern circars and Hyder was to attack Madras. He moved from his capital in June 1780. Colonel Baillie was then commanding Guntur. Colonel Brathwaite in Pondicherry and Colonel Cosby in Tiruchirappalli were ordered immediately to converge on the Presidency with their forces. Lord Macleod proposed Madras as the point of concentration for the forces. Sir Hector was sent to Kancheepuram. He took the command himself on the 24 August 1780, and before Sir Hector Munro made his first march from the Mount towards Kancheepuram Colonel Baillie had arrived at Gummidipoondi. The forces of Munro and Baillie were united. The Chief Sir Hector Munro, marched on sending orders to Baillie to join him at Kancheepuram by way of Perumbakkam. Hyder, whose spies kept him informed of everything, at once moved off from Arcot suddenly and took up an entrenched position at place about 6 miles west of Kancheepuram.

Colonel Baillie arrived on the north bank of the Korttalaiyur on the 25 August 1780. The river was then dry and the British was thus detained on the north bank until 4th September. Tipu who was ready with a picked force was preparing for the attack. Colonel Baillie was at Perumbakkam and an indecisive engagement took place on the 6th September 1780, which lasted for three hours. He detached Colonel Fletcher with the flank companies of his army to reinforce Colonel Baillie. Colonel fletcher succeeded in reaching Perumbakkam by suddenly ordering them to go by an unfrequented route and Colonel Baille was able to start from perumbakkam on the 9th September 1780. The opposition offered by the enemy became more serious. The morning of the 10th September brought the dire result, for Hyder's whole army was advancing. The British force was in a difficult position. Colonel Baillie saw further resistance hopeless. He was taken prisoner[196].

In the meantime, Sir Hector had advanced till within two miles of Pullalur where the disaster took place. This was one of the greatest disaster which the British had ever met with in India. Sir Hector retreated to Chengalpattu. At Chengalpattu as at Kancheepuram, he found nothing which the Nawab had promised to supply. But he was joined by Colonel Cosby and he finally determined to march through St. Thomas Mount. He finally entrenched himself on the banks of the Adyar river. Meanwhile, Hyder marched towards Arcot and after six weeks' siege, he succeeded in his attempt.

The Governor- General appointed smith as the Governor of Madras and sent down Sir Eyre Coote to take the command of the troops. Hyder had taken Karunguli and Chengalpattu was also invested. Coote was not able to take the field, until the 17th January 1781. Two days after, he relieved Chengalpattu. Captain Davis was despatched with 1000 men to retake the fort of Karunguli and he captured the place. Next Coote relieved Wandiwash and Porto Novo on 1st July 1781. On hearing that Tipu was commanding a separate force before Wandiwash, Coote hurried up the coast through Chengalpattu and the Mount in order to circumvent him, Tipu was preparing to arrest his progress on the road between Madras and Nellore to the west of the Pulicat lake. The British commander then marched to reduce Thiruppasur, 33 miles from Madras on the road to Arcot. He used Poonamallee as a basis for supplies. On seeing Hyder's advance, he ordered his men also to advance and they were actually leaving the trenches when Hyder surrender the place and drew off.

The Brithish arrived at Perumbakkam on the 26th August, 1781. Hyder was seen advancing and the next day, the fight started which continued for several hours.

Sir Eyre Coote captured Pullalur and the Mysore army retreated to Vellore. The Vellore Fort also fell on 14th June 1782 to the British hand. But, the Mysore hero who could not succeed in his attempts to curb the British power, breathed his last in December 1782 owing to cancer[197]. His death

was kept secret till Tipu, who was away on military assignments came and assumed office. When the British came to know of Hyder's demise, they urged on the new commander-in-Chief General Stewart to take advantage of the confusion and to attack Mysore. But the commander refused to do so[198].

After Hyder, his able son Tipu continued the Anglo-Mysore wars to which he succumbed in 1799. These wars did not, however, directly affect the district.

Arcot Nawab Mohammed Ali who had granted the district as 'Jagir' to the British, died in 1795. He was conferred upon a title *Nawab Wallajah* by the Emperor of England. The village Wallajabadh in the district was named after this Nawab. He was succeeded by his eldest son Umdut-Ul-Umarah who held the Nawabship till 1801. He was succeeded by his son Ali Hussain as the Aroct Nawab. Lord Wellesley imposed a condition that Ali Hussin could continue as the Nawab only on ceding the entire Carnatic Region to the British. Wellesley charged the Nawab and his predecessors of secrety assisting Tipu Sultan in the latter's campaign against the British. Ali Hussain entreated the British to prove the charges. Hence, the British Government removed Ali Hussain and made Muhammed Ali's second son Amir-Ul-Umara as the Nawab as he had agreed to hand over the entire Carnatic regions to the British. He was offered one fifth of the revenue from Carnatic as pension and a treaty in this regard was signed on 21 July 1801. This Treaty completed the acquisition of the entire carnatic by the British.

The Nawab held office only as the titular heads of the State and Lord Dalhousie abolished this titular headship also by applying the Doctrine of Lapse in 1855 when Ghulam Muhammed Ghouse Khan (1825-1855) died without a heir.

Since the year 1780, the history of the district consists chiefly of a chronicle of territorial arrangements and transfers. In 1784, it was divided into 14 separate farms and rented out. Four years later, it was parcelled out into two Collectorates, which again in 1793, united into one 'district'. In 1801, Pulicat, which was ceded to the Dutch by the Nawabs was added to the district. The British Administration appointed collectors to look after the general and revenue administration of the district and this administrative set-up, continues even now, with suitable changes wherever necessary.

The Role played by the District in the Indian Freedom Movement

The Chengalpattu-MGR district took an active part in the Country's Freedom Movement. Though the anti-British attitude existed in Tamil Nadu right from the days of Puli Devan Veerapandiya Kattabomman, Maruthu brothers, and others, who were sent to the gallows for they had refused to obey the British, it turned as a National Movement to drive the alien out of the country only in the second half of the 19th Century.

Peasant Rebellion against the East India Company Administration in the eighteenth century

When the 'Jahir' changed hands from the Arcot Nawab to the British, the latter confronted for many years by a sustained and effective opposition to their attempt to control the activities and taxation of the 2241 villages in the area. Then the area of the 'Jahir' was about 2500 sq.miles. The rural society at the close of the 18th and the beginning of the 19th centuries consisted of the landlords called Mirasidars and farm labourers(mostly the Pallis and the Adi Dravidars). When the East India company began to assess and collect land revenue, the Mirasdars with the collusion of the local village accountant and the local revenue officials tampered with the annual village revenue accounts when this collusion attracted the attention of Lionel Place the then collector of the district, he took sternous effort to prevent it and there by met with stiff resistance from the peasants and the land lords. This is perhaps the first local opposition to their administration. The peasants used to submit petition to the higher authorities highlighting their hardship and the oppression meted out to them by the revenue officials including the Collector. On the occasion in December 1785 a senior official in Madras received a petition from the inhabitants of Poonamalle seeking redressal of certain grievances. There was also an 'insurrection' against the company administration engineered by Elavappa Mudali of Poonamalli and Oppa Mudali of Mangadu. The mode of insurrection was to strike cultivation works in the lands owned by the company so that no revenue could be derived. In this kind of insurrection the revenue officials in the district were put in such a precarious position. The company executives did not relish anything that could deprive them of the revenue. So they could direct their district officials to settle the disputes with the peasants amicably. Lionel Place had to resign as the Board of Revenue and the Governer in Council could not approve some of his harsh measures against the cultivators of the district. The cultivators petitioned to the Governor-in-Council that his assessment was harsh and he once insisted to bring stones by breaking the temples to build Chembarambakkam lake. Hence what is inferred from the records is that the society began to resist the British administration right from the beginning, though if not under the banner of 'freedom struggle'[198a].

The Vellore Mutiny that took place on 10 July 1806 is regarded as an important episode in the country's struggle against the British rule[199]. The Tamil soldiers under the services of the British mutineed on that day protesting against the British for their interference in their religious beliefs and to liberate the sons of Tipu Sultan who were imprisoned in the Vellore Fort. Though the mutiny was quelled before it began to spread, it may be called as a prelude to the Indian Mutiny that took place 51 years later, - which the historians call the first war of Indian Independence.

The end of the last century, saw the birth of the Indian National Congress. Madras sent its representative to the inaugural session of the Indian National Congress held on 28 December 1885 in Bombay. The first resolution there, was moved by G. Subrahmanya Iyer, - a unique honour, as well deserving, considering his part in the formation of the organisation[200]. On returning from Bombay, P. Anandacharlu, P. Rangaiya Naidu, G. Subrahmanya Iyer and other organised the provincial unit of the Congress in Madras[201]. Thus, began the involvement of Madras in all India politics in right earnest and this lead continued thereafter.

Among the founders of the Madras provincial congress, P. Ananda Charlu, was associated with the present Chengalpattu-MGR district. His initial 'P' stands for 'Panampakkam' which was his ancestral village located in the district[202]. He was also the founder of the Madras Mahajana Sabha in 1884 which became the leading public forum for years.

Annie Besant's Home Rule League spread well among the members of Theosophical Society. She edited newspapers and magazines to probagate her message of Home Rule. As early as in 1878, *The Hindu* was started by six young graduates. One of the founders of the Newspaper was M. Veera Raghavachariar who belonged to Attur, a hamlet in the district[203]. He took up the management of the business side of *The Hindu* and devoted his energy and talent for organisation to bring that paper to the front rank among the native Indian Journals in the country. He was also instrumental in establishing the 'Mahajana Sabha' which gave vent to popular discontent against the harsh measures of the British Indian Government and continued as its Joint Secretary for many years. Besides, he distinguished himself as the vice-president of the Chengalpattu District Association; when the *The Hindu* ran into financial difficulties in September 1898, the partnership between G. Subramania Iyer and Veeraraghavachariar was dissolved and the latter was left in sole incharge of the paper. *The Hindu* under him during the course of 25 years had to pay heavy damage thrice, for criticism expressed against the British. Whether in organising the work of the Congress and making arrangements for its sittings, for the reception of its delegates in the Congress Camp, and whether in organising public meetings or conferences, he exhibited the same resource, task energy and business capacity which contributed in an eminent degree to the success. He was a trusted leader to the Congress Committee.

The credit of broadcasting for the first time the seeds of nationalism in our State belonged to Mrs. Anne Besant. Within a year of the declaration of the First World War, she started in Madras, as the government themselves put it, "a red hot agitation for Home Rule - Self Government or Swaraj - which soon began to spread like wild fire from district to district[204]. Everywhere both in the city and in the districts, speeches were delivered, pamphlets issued, and student strikes and demonstrations were staged.

In August 1920, Gandhiji himself came on a propaganda tour to the south and delivered a number of speeches in Madras and in the districts of Tamilnadu including the present Chengalpattu-MGR district. In these speeches, he emphasised the non-cooperation, signified the force of truth or the force of soul, that its acceptance involved the rejection of all physical violence as well as the implementation of all policies laid down by the Congress such as the resignation of titles, the boycott of Legislative Councils and foreign goods, national education, temperance, labour unions, etc[205]. The call of Gandhiji resulted in the hartals and public meetings in the district.

Thiru-Vi-Ka.-Kalyana Sundara Mudaliar born in Tallum of the Chengalpattu-MGR district in 1883 was an illustratious son of the district who was one of the top ranking leaders of the Freedom Struggle. A gifted orator in Tamil and an ardent scholar in the language, he served as Tamil Teacher and Lecturer in many educational institutions. He became one of the editorial members of Desabakthan, a Tamil daily and an organ of the Madras Provincial Association.

In the year 1917, greatly influenced by S.Srinivasa Aiyangar, Bala Gangadhar Tilak and Anne Besant, Thiru-Vi-Ka entered into politics. His great contribution to nationalism dates back to 1920-1947. He actively took part in the 'Non-Cooperation Movement'and organised demonstrations against the Rowlet Act, 1919. In 1926, he was elected President of the Tamil Nadu Congress Committee. As a promoter of social reconstruction, he worked for the upliftment of women and founded the labour movement in 1918 in association with B.P. Wadia[206].

Congress Conference at Kancheepuram - 1925

Kancheepuram became the venue of a Congress Conference in the year 1925. In this Congress Conference, E.V. Ramasamy, *(Thanthai-Periyar* as he was popularly called) who started his political career as a Congress leader and later turned as a social reformer and fought for social equality, raised an issue. He opposed separate mess for Brahmins and non-Brahmins in a National School run by a top Congress leader V.V.S. Iyer in Cheramadevi. He moved a resolution in the Kancheepuram Political Conference that Provincial Congress Committee should publicly declare that it did not lend support to the school. This was rejected by the leaders of the Conference, most of whom were Brahmins. In the same evening, he announced the formation of the Self-Respect Movement. This Conference was presided over by Thiru. V. Kalyanasundara Mudaliar. He ruled out the resolution brought out by E.V.Ramasamy seeking communal representation in the government services as they were dominated by Brahmins, on the ground that the Congress was fighting to throw out the British Government along with its administrative set-up and as such the Conference was not concerned with the existing administrative set up[207].

Civil Disobedience Movement — 1930-1931

In the Simon Commission Boycott (1928) and Salt Satyagraha (1930), many volunteers and leaders from the district took part. On 28th December 1929, Bharath Yuvak Sangha staged an agitation in Avadi. The members of the Legislative Councils from the district resigned in February 1930. The educated classes of the district, though they followed the events of the Civil disobedience movement closely and sympathetically, made no outward demonstrations of their sympathy. On 13 March 1930, three Congress volunteers made public speeches in Sriperumpudur. In Sholinganallur village, the Congress volunteers who came there on 17 April 1930 began to manufacture salt, breaking the Salt Law. But, they were brutally prevented by the police and the salt officials. They imbibed a spirit among the villagers which gave a fresh impetus in their struggle. An order under Section 144 Criminal Procedure Code (Cr.P.C.), was promulgated in the village and the volunteers were arrested and imprisoned. But,the villagers fought severely and held a public meeting in the village on 2 June 1930 defying the order under Cr.P.C., which was in vogue in the village. The police made lathicharge and the volunteers pelted stones on the police. It resulted in firing which made one of the patriots as martyr and wounded two volunteers.

An attempt to lead a procession by the work-shop labourers of Sembium (then formed part of the district) was thwarted. An attempt to hold public meeting in Kancheepuram was prevented by putting many patriots behind the bar. When two of the volunteers arrested in Kancheepuram were brought to Chengalpattu for conviction, the people of the town made their protest against the atrocitites aimed at their compatriots. Meetings were conducted in remote villages too, supporting the Congress and disobeying the Salt-law. Congress meetings in Madirpakkam and Manalur were organised. But, the Government stopped them for the time being using their iron hands. In Kancheepuram, the arrack sale boycott campaign was organised when Gandhiji was arrested on 6th May. There were hartals in almost all the parts of the district except Saidapet. About 23 persons including a woman were arrested all over the district and sent to Jails during the course of the Civil Disobedience Movement in the district[208].

The diary of events of the Civil Disobedience Movement in the district and the narration of the events in Sholinganallur, Kancheepuram, Sembiam and Chengalpattu and the details of volunteers imprisoned, as given in the Strictly Confidential Report of the British Government on the Civil Disobedience Movement in the district reported by J.Hussain Khan, District Magistratae on 4 January 1931, are reproduced in the *Appendix-3.*

Quit India Movement in the District

The Civil Disobedience Movement came to an end. By a settlement reached by Gandhiji on behalf of the Congress, with Lord Irwin, - the Viceroy, on behalf of the British Government (March 31), the Congress called off the Movement and agreed to participate in the Round Table Conference held in London. The British Government withdrew all repressive ordinances, banning the Congress Organisation, etc., and released all political prisoners. But, this truce remained in force only for a time. The Civil Disobedience Movement was started again in 1932. Gandhiji visited Tamil Nadu and toured all the districts where he was treated 'like a God'[209].

In the meantime, the British Parliament passed the Government of India Act, 1935, which granted provincial autonomy. The Act came into force on 1 April 1937. Elections were held in the Presidency. In this election campaign, no leader attracted a larger audience and none produced a greater impression than Jawaharlal Nehru, who arrived Madras on 5 October 1936, and undertook a tour of Tamil Nadu. In the district, he was welcome with great enthusiasm.

In the election held as per the provisions of the Government of India Act, 1935, the Congress came out successful in 159 Assembly Constituencies out of 214. The Justice Party won 16 seats. The Congress Ministry was formed with Chakravarthi Sri C.Rajagopalachariar as the Premier. Later, the second world war broke out. The Congress Ministry resigned in order to campaign against the war policy of the government.

The Congress Committee passed a Resolution in its Wardha session on July 6, 1942 to drive the British out of this country. The 'Quit India' movement gained momentum in Tamil Nadu and Thiru K. Kamaraj, the then President of the Tamil Nadu Congress Committee campaigned all over the state.

More than 250 active volunteers and freedom fighters belonging to the Chengalpattu-MGR district took active part in Individual Satyagraha, Salt Sathyagraha, Foreign Cloth Boycott, Toddy and Arrack shop - Picketing, Civil Disobedience Movement and 'Quit India' Movement[210].

Panapakkam Anandacharlu, M.Veera Raghavachariar and T.V. Kalyana Sundara Mudaliar, who hailed from the district were pioneers in the district's role of the Indian Freedom Struggle.

C.N. Muthuranga Mudaliar born in 1882 at Pettai in Chengalpattu-MGR district joined the Swaraj Party and subsequently enlisted himself as an active member of Indian National Congress. He was an alumni of the Madras Christian College, Tambaram and during his studentship, he studied the works of nationalist writers[211], and in close association with S.Srinivasa Iyengar, he led the Satyagraha Movement in Tamil Nadu and went to Jail for several times. For some years, he served as the Secretary or the President

of the Madras Mahajana Sabha. In 1926, he was elected to the Madras Legislative Council from the Chengalpattu Constituency. The next year, he served as the Chairman of the Reception Committee of the Indian National Congress Session held at Madras. He was vice-President of the Tamil Nadu Congress Committee for a short period and was elected as its President in the years 1929, 1937 and 1938. In 1946, he became a member of the Central Legislative Assembly.

Mudaliar was widely known in Tamil Nadu as an ardent patriot and an able legislator. He was active in freedom movement between 1926 and 1940. In support of the movement, he led agitations, addressed meetings in the district and other places and wrote articles to the press.

His nephew was M.Bhaktavachalam, another contribution by the district to the Freedom Movement and later Tamil Nadu politics. Born in 1897 in Nazarethpettai near Sriperumpudur, M.Bhakthavachalam, associated himself with the Indian National Movement, since his College days. In 1918,he attended the Chengalpattu "District Congress Conventions" at Kancheepuram which was presided by the Nightingale of India, Sarojini Naidu. Bhaktavachalam involved himself in the constructive work of the Congress by organising Boycott of Liquor shops at various places by virtue of being the Secretary of the Prohibition Committee to which Rajaji was the Chairman[212]. He, along with his uncle C.N.Muthuranga Mudaliar, was associated with the National Education Movement organised by the Congress. He was arrested thrice and imprisoned while fighting for the national cause. While he was in prison in 1932, he was elected as the member of the Chengalpattu District Board and later as the vice-President of the Board.

O.V.Alagesan, a veteran freedom fighter and a seasoned politician also belonged to the district. Born in 1911 in Chengalpattu, he associated himself with the Congress and National Movement. He was imprisoned for more than once for his participation in the struggle for Independence. He was elected Vice-President and later (1939) President of the Chengalpattu District Board. He took active parts in the 'Quit India' Movement.

The 'Quit India' Movement was at its peak between August and December, 1942. The major events that took place in the district are briefed below.

On 10 August 1942, some students of the Madras Christian College, Tambaram stayed away from class registering their cooperation for the Movement. On 11 August, the Kancheepuram branch of the Desia Valibar Sangam (National Youth League) took out a procession and in Tiruvallur a public meeting was organised by the Congress to enlist the public support. On 12 August, the Madras Christian College students stayed away from classes and the students from Guindy Engineering College also followed

suit. The same day in Saidapet, four Congress men arranged for a procession to protest against the arrest of Gandhiji and other leaders. The next day, shops in Saidapet were closed as a token protest against the arrest of national leaders.

On 16 August at Nagalapuram (then within the district), about 500 persons gathered and marched towards the local police station shouting slogans. The police did not attempt to prevent the crowd as they were short of forces. In Tiruvallur, Mangilal Sowcar and his brother Madan Mohanraj, who held a meeting in defiance of the prohibitory orders of the District Magistrate were arrested. In Tambaram, the Madras Christian College students did not attend to classes as a mark of respect for Maha Deva Desai.

On 18 August, the employees of the Madras and Southern Maharatta Railways protested against the prohibitory order in the district. Posters condemning the British Government were stuck on the walls in Little Kancheepuram.

In Kancheepuram, a meeting organised by the National Youth League was dispersesd by the Police. On 20 August, damages were made to the rails in Avadi as a token of agitation. Six students of the Madras Christian College condemning the British Raj caused damgae to the fittings o f Electric train between Saidapet and Tambaram. They were imprisoned and fined. On 21 August, attempts were made in Chengalpattu to disconnect Telegraph wires and in this regard three volunteers were arrested. In Thiruvothiyur, N.V. Kaniappan was arrested for a meeting in contravention of prohibitory order. He was convicted and sentenced to six months rigorous imprisonment. On 25 of the month, about 220 yards of Trunk Telephone wire and 110 yards of railway control wire were removed between Ottivakkam and Padalam in Madurantakam taluk. In Sembium, the railway employees held a public meeting to register their protest against the British atrocities. On 26 August, three more persons who organised and took out a procession to police station in Nagalapuram were arrested. On 27 August, Five Loyola College students were arrested as a part of mob who had put gravel in the points and placed a boulder on the railway line between Chrompet and Tambaram. In Tambaram, a gathering of the students was lathicharged. In Uttiramerur, about 79 feet of Telegraph wire was removed. The Madras Christian College was closesd till 23 September 1942.

On 2 September, a loop telegraph wire was cut opposite to the Mission Hospital, Kancheepuram. On 3 September, two Loyola College students were arrested under the charge of causing damage to train. The students were sentenced to 15 stripes of whipping each on 5 September by the Sub-Divisional Magistrate, Saidapet. The sentence was carried out the same day.

On 6 September, a window of branch post office in the Ponvilaintha Kalathur village was set fire damaging the window and a record box. The Chengalpattu District Board passed resolutions approving of the decision of the All-India Congress Committee and condemning the arrest of the Congress leaders. It also passed a resolution to close all offices and Institutions under its control on 15 September 1942 as a mark of protest.

On 7 September, the students of the Guindy Engineering College abstained from attending their classes, protesting the award of whipping sentence to the two Loyola students on 5 September.

On 9 September, Venugopal Reddi of Minjur was arrested and protesting this arrest, the Essential Services camp at Vallur was set on fire.

On the night of 11 September, three toddy shops in Kancheepuram were burnt down and a military telephone wire was also cut. The local Congress leaders were arrested in this connection. On the night of 12 September in Ponneri, two thatched sheds of District Board High Schools were burnt to ashes. One Venkata Krishna Sarma was arrested in this connection. The local Congress leaders wrote letters to the government servants to tender resignation in support of the 'Quit India' Movement. The suspected writers of the letters were arrested.

On 17 September in Karunguli, a toddy shop was burnt and telephone wire was damaged. On 21 September, a toddy shop in Sembiyam was burnt down.

On 25 of the month, two persons picketed before the Chengalpattu Session Court and they were arrested. Next day, in Kancheepuram, telegraph wire was cut.

On 2 October, the Madurantakam Hindu High Schol students celebrated the birth day of Gandhiji and stayed away from classes. The birth day of Gandhiji was also celebrated by the students of Tambaram Christian College and Guindy Engineering College.

On 15 October, while sorting the letters in Chengalpattu post office, one letter containing explosives exploded and a post box in the railway station was burnt. On 27, Kandasamy Reddi picketed before the Chengalpattu Sessions Court and was arrested. Two days later, two volunteers who were issuing pamphlets in the Chengalpattu Sessions Court were arrested.

In Poonamallee, two persons who disobeyed the prohibitory order, were arrested on 1 November. Next day in Kanchipuram, three post boxes were removed as a protest.

As chronicled above, it is clear that the district played its role effectively in the 'Quit India' Movement. The movement remained active in Madras and in other districts only for a few months, roughly from August to November 1942. Thereafter, it gradually, died down[213]. The political atmosphere in the country however, continued to remain dark and sullen what with the detention

of Congress leaders in Jail and the unhelpful attitude shown by the Viceroys, - Lord Linlithgow and Lord Wavell.

Gandhiji was released in May 1944. From 1945 however, the sky began to clear. The formation of Labour Government in England, the arrival of first of the Parliamentary Delegation and then of the Cabinet Mission to hammer out new Constitution for India, - all these led to a succession of political changes.

India attained Independence and the dawn of freedom was greeted in Madras and the districts with great rejoicings. The Independence Day was celebrated with great enthusiasm alike in the city and in the districts.

The political history of the district after independence, relate to the General Elections and participation of leaders of.different political party in elections. The subjects are dealt with in greater detail, in the chapters on "Public Life and Voluntary Social Service Organisations" and "People".

A list of Freedom fighters belonging to the district, with their brief biographical details is given in the *Appendix-4*. The details have been gleaned from the book "who's who of Freedom Fighters (Tamil Nadu)", - a Government of Tamil Nadu Publication.

Popular Movements in Chengalpattu-MGR District

Non-Brahmin Movement

The descendants of the Dravidian and Aryan Civilizations in Tamil Nadu began to be widely identified as non-Brahmins and Brahmins respectively. Though in some respects, the two cultures mingled with each other, there were wide sociological and linguistic differences between them. The former began to believe that they were socially oppressed by the latter. This gave birth to a movement in Tamil Nadu to fight for the social equality of the non-Brahmins.

In the year 1916[214] C.Natesan (Mudaliar), a medico and a number of non-Brahmins enthusiasts from other parts of the State including the Chengalpattu-MGR district, established a Dravidian Hostel in Madras city. It is regarded as the beginning of the Movement in Tamil Nadu.

P. Thiagarajar

The role of the district in the growth of the Movement was vital since P.Thiagaraja (Chetty) the doyen among the non-Brahmin leaders who began the movement, was born in Egathur of the district[215], though his family had shifted its residence to Madras city even while he was a boy. Thiagarajar was a relentless and courageous warrior of social equality.

Thiagarajar along with T.M. Nair started South Indian People Association, the precursor of the Justice Party, - a political organisation dominated by the non-Brahmins.

Thiruvarur-Vi-Kalyanasundaram (Mudaliar), a versatile Tamil scholar and a sympathiser of the Indian National Congress as well as the Non-Brahmin Movement, was an illustrious son of the soil as he was born in Tullum[216] of the district. Through he could not fully agree with the policies of the Justice Party, he had supported the movement for the social equality of the non-Brahmins.

M.C.Rajah[217]

M.C. Rajah, an untiring leader of Adi-Dravidas, and an active member of the Justice Party, hailing from St.Thomas Mount of the present Chengalpattua-MGR district, who had the distinction of being the first Adi-Dravida representative in the Madras Legislature, was not satisfied with the attitudes of the Justice Party towards Adi-Dravidars. He voiced his grievances in the Council itself in 1921[218]. Later, he left the Justice Party in 1923[219].

While Justice Party was in power in the Madras Council, non-Brahminism was riding high on a tide of reforms towards the betterment of the non-Brahmins of the Madras Presidency. These reforms included the establishment of the quotas, based on the caste and religion for civil service posts, ensuring the rights of non-Brahmins in seeking government office, etc[220].

Self Respect Movement

The Justice Party began to decline in the Madras Presidency owing to various reasons. As a result, the mantle of the Non-Brahmin Movement has fallen on the shoulders of E.V.Ramasamy Naicker, the Erode born Congress functionary turned non-Brahmin rationalist leader who is venerated as 'Periyar' meaning 'the great Sage'.

The movement had received good response from the non-Brahmins of the Tamil districts of the Madras Presidency. The Chengalpattu-MGR district which has geographically encircled the city of Madras, the hub of the activities of the leaders of the movement, had fair participation in the agitation and demands of the Self-Respect Movement. The district had close association with the two important episodes in the history of the Self-Respect Movement.

They are the 1925 Congress Conference held at Kancheepuram in which E.V.Ramasamy[221] hitherto an active Congressman, came down heavily on the Congress Policy towards the non-Brahmins and his subsequent walk-out and the convening of the First provincial Self-Respect Conference at Chengalpattu in 1929. Thiruvothiyur-Shanmugam and a host of others from the district formed the crux of the leadership in the movement.

1925 - Congress Conference, Kancheepuram

The Madras Congress Committee convened a conference in Kancheepuram, the present headquarters of the Chengalpattu-MGR district, in the year 1925. Even before convening the congress there arose a conflict between the leading non-Brahmins and Brahmins in the congress over an issue relating to the treatment meted out to the non-Brahmin students of the Gurukulam run by V.V.S.Aiyer, a leading Congress man, in Cheranmahadevi of the then Tirunelveli district[222]. It was reported that the non-Brahmins students were not allowed to dine with the Bramins in the Gurukulam. This was vehemently opposed by P.Varadarajulu Naidu and E.V.Ramasamy, both then, were active congress members. With the Gurukulam affair still burning and the Brahmin and non-Brahmin conflicts brewing, E.V.Ramasamy came to the Congress conference, Kancheepuram in November 1925, ready for a showdown with the Brahmins[223].

In the issue dated, November 3, 1925, of 'Kudiarasu' (Republic), a Tamil paper edited by E.V.Ramasamy, he had cautioned the "popular representatives" attending to the Kancheepuram Conference to be vigilant to safeguard, their interest[224].

In the conference, he submitted two resolutions, both recommending that congress should recognise the principle of communal representation for non-Brahmins in public services and representative bodies, - the same idea accepted in 1917 by the Madras Presidency Association and in 1920 by the Madras Pradesh Congress Committee by a resolution from V.O.Chidambaram Pillai. Both the resolutions were disallowed by the Chairman of the Kancheepuram Conference, Thiru.Vi.Kalyanasundaram, on the grounds that they were earlier rejected by the Subject Committee of the Congress. Over this issue, E.V. Ramasamy and several other non-Brahmins in the Congress walked out.

An hour after the walk-out, almost all the non-Brahmins attending the Conference met again under the presidentship of T.A.Ramalingam, who had left the Justice Party in 1921 and remained independent politically and began to discuss a resolution that summarised the two rejected resolutions. P.Varadarajulu urged moderation while E.V. Ramasamy took a militant stand.

After his walk-out from the Kancheepuram conference, E.V.Ramasamy virtually kept away from the Congress and floated 'Self-Respect Movement', a little later.

First Provincial Self-Respect Conference at Chengalpattu - 1929

E.V. Ramasamy's *Suyamariyathai Iyakkam*, *i.e.* (Self-Respect Movement) instilled, among the non-Brahmins, a sense of pride based on their glorious past.

The most important event in the history of the Self-Respect Movement, probably, was the convening of the first Provincial - Self-Respect Conference, on 17 , February 1929. The venue of the conference was the Chengalpattu town. The convening of the Provincial Self-Respect Conference at Chengalpattu might indicate the good response the movement received from the district[225]. The speeches and resolutions at this conference reflected the different facets of the movement that were articulated during the previous four years-its strong egalitarian bias and its determination to boycott Brahmin Priests, as well as its desire to attract young people and women and above all, its devotion to what it considered to be Dravidian Civilization.

The Chengalpattu Conference was well attended, W.P.A. Soundara pandyan Nadar, an exponent of the Self-Respect Movement, presided over the conference. A number of important Justice Party members were present. The participants included three Brahmins also. The meeting was dominated by the ideas and personality of E.V. Ramasamy. P.Subbarayan, the Independent - Chief Minister of Madras Presidency, attended the meeting and addressed the people. M.K.Reddi, the Chairman of the Reception Committee called for a "through based revolution", with a Luther, a Lenin or a Musolini to purge the evils that had made such heavy inroads into society under the aegis of religion[226].

Of the many resolutions passed in the Chengalpattu Conference, one is against the employment of priests in the temple and other ceremonies. Another condemned the 'Varnasramadharma' and the arbitrary division of society into Brahmins , Kshatriyas, Vaisyas, Sudras and Panchamas and repudiated the belief in superiority based on the "accident of birth". Next resolution condemned the use of caste suffix with the names. And for the women, a resolution was passed - claiming for them, the same rights of inheritance as men and advocating that marriages should be terminable at the will of either party[227].

The district also responded to the agitation against the move for the imposition of Hindi in Madras Presidency organised by E.V.Ramasamy and his Justice Party. In December 1940, a meeting to protest against the imposition of Hindi was held at Kanchipuram in which prominent leaders including Thiruvothiyur Shanmugam addressed[228].

C.N. Annadurai, a college educated intellectual, from Kancheepuram, joined hands with E.V.Ramasamy who in 1944 re-christened it as Dravidar Kazhagam. But differences of opinion, between E.V.Ramasamy and C.N. Annadurai crept which resulted in the formation of Dravida Munnetra Kazhagam in 1949, after an inevitable break in the Dravidar Kazhagam over certain issues[229].

C.N.Annadurai was a many faceted personality. He was a playwright, actor, cinema dialogue writer, novelist, journalist, et al. He cleverly used his skill in propagating his ideals through mass media. He started "Kancheepuram Dravida Nadiga Kazhakattar" which staged many revolutionary plays and made the people realise their rights and duties in a democratic country.

In 1965, the move to make Hindi a compulsory subject of study in schools and Colleges of Tamil Nadu was revived. By this time, the Chief Minister of the then Madras State was M.Bhakthavachalam, a veteran politician, who hailed from the district. Most of the school and college students opposed the imposition of Hindi. The agitation was organised by the Dravida Munnetra Kazhagam, which received the support from other political organisations including the Swatantra Party of Rajaji[230].

The Anti-Hindi agitation and its success gained enormous popularity to the Dravida Munnetra Kazhagam. Ultimately, it was voted to power in the General Elections held in 1967. After twenty years of Congress rule after Independence, Madras State came under the rule of a non-Congress Party. In 1967, C.N.Annadurai, became the Chief Minister of Tamil Nadu and after his premature death in 1969, M.Karunanidhi succeeded him. In the 1977 General Elections, M.G.Ramachandran, a popular charismatic DMK leader and cine actor who formed the ANNA-DMK after being expelled from the DMK owing to differences of opinion with the top leaders, was voted to power. He also had association with the district since his residence was in 'Ramavaram Gardens', loocated in the Saidapet taluk of the district. The district now has been named after him.

It also needs mention that after the death of M.G.Ramachandran, his wife, Janaki acted as the Chief Minister for a brief period. Since she lived in Ramavaram, she also has some association with the district and in fact, she was the fourth Chief Minister of Tamil Nadu to have a connection with Chengalpattu MGR district.

Religious Movements in the district

Till about the fifth Century AD, harmony and tolerance characterised the relations between the different religious sects[231]. Worship of Nature, Primitive godlings, performances of elaborate vedic sacrifices, the worship of the popular pantheon included many deities like Muruga, Siva Vishnu, Indra, Krishna and others. Practising of Buddhism and Jainism co-existed in Kancheepuram, then shone as a centre of Philosophical learning. In the story of Manimekalai, for instance, we find the heroine was advised to study at Kancheepuram the philosophical systems of the, Muruga , Siva, Vishnu, Ajivika, Jaina and of the Sarkhya, Vaiseshika and Lokayata[232].

But soon a great change came, particularly in Tamil country and people began to entertain fears of the whole land going over to Jainism and Buddhism[233]. At any rate, worshippers of Siva and Vishnu felt the call to stem the rising tide of heresy. The growth, on the one hand, of an intense emotional bhakti to Siva or Vishnu and, on the other of an outspoken hatred of Buddhists and Jains, were the chief characteristics of the epoch. Challenges to public debate, competition in the performance of miracles, test of the truth of doctrines by means of ordeal, became the order of the day. Parties of devotees under the leadership of one gifted saint or another traversed the country, singing, dancing and debating all their way. This great wave of religious enthusiasm attained its peak in the early seventh century.

Betokening the renaissance of Hindu religion in the 7 Century AD, there arose a group of Tamil psalmists who sang brilliant prayers to Siva and Vishnu and this energised Saivism and Vaishnavism. They were Nayanmars and Alwars[234].

Nayanmars

Later tradition counted sixty three Nayanmar as the most prominent saints of this revival on the side of the Saivism. The most prominent among them were the three great men, Appar, Sundarar and Gnanasambandar whose hymns are collected together in the Devaram.

Thirunavukkarasar

Of the three authors of Devaram, Appar also known as Thirunavukkarasar closely associated with the district, since he was a contemporary of Pallava ruler Mahendravarman-I. He hailed from a Vellala family of Tiruvamaur. He was attracted towards Jain Philosopyhy and joined a Jain Monastry in Cuddalore as a monk. His elder sister, who had watched his change of faith with untold regret, implored Siva's help. Her prayer was answered. Dharmasena, as he was named in the Jain Monastry, suffered from a severe incurable abdominal ailment. When his fellow Jain monks could find no way to cure his disease, he was compelled to seek his sister's aid. It is said that she secured his cure by the grace of the god of Thiruvatigal. The news of his defection of faith greatly upset the Jain monks who turned hostile towards him. They poisoned the mind of Mahendravarma Pallava, a patron and follower of Jainism himself, against Dharmasena, now known as Thirunavukkarasar. He was subjected to many ordeals which, however, by the grace of Siva, he easily surmounted. Finally the king himself was convinced of the superiority of Saivism and embraced it. The age of the Great Pallavas marked the heydays of the Bakti movement in Tamil Nadu[235].

Siruthondar

Siruthondar, one of the 63 Nayanmars, began his career as a brave general in the Pallava Army. His name as the General was Paranjothi who played an important role in the Vatabi expedition of Narasimha Varmapallava. Periyapuranam, the hagiology of the 63 Nayanmars, authored by Sekkizhar, a contemporary of Kulotunga-III (AD 1133-1150) of Kunrathur of this district, narrates his devotion to Lord Siva that he and his devoted wife agreed to host a feast to a Sivachariar, the Lord Siva himself in an incarnation, with the food cooked out of the flesh of their only son. The one more conditon, the Sivachariar put forth to accept the feast of Siruthondar was that the son should be butchered by the father while the mother should hold him tight. A staunch Siva devotee that he was Siruthondar - fulfilled the conditions of the Sivachariar who is said to have appeared before him as Lord Siva with His consort, Parvathi and revived the life of Siruthondar's butchered son.

Poosalar Nayanar

He is also one of the 63 Nayanmars hailed from Thiruninravur of the district. As Periyapuranam describes, he was a poor ardenat Siva devotee whose sole aim was to build a temple for Lord Siva. Having no resources to achieve his goal, he-built an imaginary temple day by day in his heart. On the completion of the construction of the temple in imagination, he fixed a day for consecration of the temple. Kadavarkon, a king in the Pallava country, who had built a temple for Lord Siva also fixed the same day for consecration. The God appeared in the dream of Kadavarkon and asked him to put off the consecration since He had to be present at the consecration of the temple built by Poosalar in Thiruninravur, on the same day. The king did as ordered by the Lord and he himself came to Thiruninravur to witness the consecration. When he came to know about Poosalar's temple built in imagination, he applauded the devotion of Poosalar Nayanar[236].

Thiruninravur, - Thiruvothiyur and many other temples and the deities in the district have been versified in the Saiva literature in Tamil Devaram and Tiruvasagam. After the Sangam classics, the Tamil language saw a renaissance under the Age of the Nayanmars and Alwars who had sung hymns in Tamil invoking Gods and Goddesses which form the devotional literature of the Tamil Language.

Alwars

The Vaishnava wing of the movement is represented by twelve Alwars. The 'Nalayira Divya Prabandam' is the compendium of the devotional hymns of the Alwars. Of the twelve Alwars three belonged to the district; Poigaiyalwar belonged to Kancheepuram, Pudathalwar hailed from Mahabalipuram and Thirumalisai Alwar was a native of Thirumalisai, near Poonamallee. Thirumalisai Alwar is said to be a contemporary of Pallava Mahendra varman-I and Thirunavukkarasar. The tradition has it that he was a shapeless

mass of flesh abandoned by his parents and brought up by a 'Sudra'. He is said to have practised Jainism, Buddhism and Saivism before settling down finally as a Vaishnava 'Yogi'. His poems show a more controversial tone than those of the first three Alwars and this was quite natural to his age.

Sri Sankaracharya

Sri Adhisankaracharya, a Nambudri Brahmin from Kaladi on the banks of the Alwaye river in North Travancore, was a great thinker, philosopher and a sage. He travelled in India widely spreading his new philosophy of rigorously consisting monism and triumphing against all rivals who met him in debate. He founded a number of maths in different parts of India, the best known being those at Sringeri, Dwaraka, Badrinath, Puri and Kancheepuram[237]. Many scholars and Chroniclers have ascribed about 50 different dates for Sri Sankaracharya ranging from 6 Century B.C. to 8 Century A.D. But, an ardent scholar of Sankaravite Philosophy, A.Kuppusamay - belonging to Sri Sankara Math, Kanchipuram, after a deep analysis of Puranas, literature and inscriptions, logically concludes that the date of Sri Adhi Sankara should be betwen 508 and 476 B.C[238]. However, K.N. Sastri and other South Indian historians fix 788 AD as the year of the birth of Sri Adhi Sankara[239].

Sri Sankaracharya's Association with Kancheepuram

Kanchipuri also known as *'Satyavratashetra'*[240] a city of many temples, a greatly renouned centre of literary pursuits and culture, is a place associated with great saints and scholars.

Cidvilasa's Sankara Vijaya Vilasa narrates that Sri Sankaracharya left the valley of Tungabadra and reached Kancheepuram[241]. The sage is said to have caused the reconstruction of the city of Kancheepuram and many of its temples with the help and support of the local ruler.

A long and uninterrupted line of ascetic Acharyas have presided over the Kanchi Sri Sankara Math right from Sri Adhi Sankaracharya to present day. Many pontiffs of the Sri Sankara Math who succeeded Adhi Sankara were erudite sanskrit scholars themselves besides being the spiritual heads. The Kanchi Math has many branch maths all over South India and one of them is located in Thiruvothiyur of the district. The math, since its foundation, received patronage from the rulers of Tamil Nadu either, Hindu, Muslim or the British.

The Sankara Math in Kancheepuram has added further religious importance to this city, besides the Colossos temples built by the early Tamil kings. The math renders social and educational services also in addition to its role as a saviour of Hindu religion.

A sculpture of Adhisankara on a wall of Hundred Pillared Hall,
Sri Varadaraja Perumal temple, Kancheepuram

Sri Ramanuja

Sri Ramanuja, the greatest of the Vaishnava Acharyas, was born in Sriperumbudur in the first quarter of the 11 Century. He had his early philosophical training under Yadavaprakasa of Kancheepuram who belonged to the school of Sankara[242]. Yamunacharya (Alavandar) is said to have once met Ramanuja at Kanchi but unwilling to disturb the progress of the youth's studies, he uttered a prayer for the increase of Srivaishnavas and returned to Srirangam. Ramanuja then disagreed with the teachings of his guru and was strongly attracted by those of the Srirangam School. Yamunacharya sent for him but breathed his last before Ramanuja could reach him. He succeeded Yamunacharya as the head of the Math at Srirangam. In his lectures and preachings he refuted the *Mayavada* of Sankara and demonstrated that Upanishad did not teach a strict monism and hence built the philosophy of *Vasistatvaita*.

The Ahobila Math at Madurantakam in the district spread the Vaishnavite philosophy and encourages oriental Education. Vedanta Desika was another Vaishnavite Scholar born in Kancheepuram.

Thondaimandalam Adhinam Math, Kancheepuram

Thondaimandalam Adhinam Math is one of the ancient maths of Tamil Nadu which traces its origin back to the period of Karikalchola (2 Century AD). It is said that this math functioned in the Sri Ekambaranatha temple, Kancheepuram and later was shifted to the present place. The heads of the math have been all along the religious perceptors of the Vellalars of the Chengalpattu-MGR and neighbouring districts. Many heads of the math were profound scholars and authors of religious books in Tamil. *'Gnanaprakasa'* is the title of the pontiffs of the math. The services of the math for the Tamil language and religions, especially for the Saiva sects of Hinduism, deserve mention.

Upanishad Brahmendra Math

This math in Big Kancheepuram has been propagting Advaitha philosophy for more than three centuries. The heads of the math are titled as *Brahmendras.*

Adhi Parasakthi Cult

About two decades ago, a secondary grade school teacher in Melmaruvathur near Madurantakam incarnated into the oracle of Goddess Adhiparasakthi and founded a *Sidhar Peedam*. He is uttered as Bangaru Adigalar, by his followers. Besides serving the religious cause, the endowment created by Bangaru Adigalar is engaged in the social services also. The endowment runs an engineering college, a polytechnic, schools, hospitals, etc. In the Adhiparasakthi temple in Melmaruvathur and its branch worshipping centres and temples, women are allowed into the sanctum sanctorum to perform 'pujas' which no other Hindu sects do.

Institute for Advanced Study of Meher Consciousness

The Meher Chaitanya Niketan Trust, Mandapeta, (East Godavari district, Andhra Pradesh) has established the Institute for Advanced Study of Meher Consciousness at Anuppampattu of Ponneri Taluk of Chengalpattu-MGR district in 1992. Sri Meher Baba (1894-1969), the Avatar of the age is considered as an incarnation of God. He has propagated his ideals as "Mastery in Servitude". He has given the Path of LOVE to humanity.

The aim of the Institute is to acquaint the seekers of Truth with Meher Consciousness for attaining the goal of life which is Self-Realization and God-Realization. The institute under the guidance of Sadguru Sri Meher Chaitanyaji Maharaj undertakes research on the Principle of Consciousness contained in the teachings of the previous incarnations of God of all faiths, bringing out the uniqueness of Meher Consciousness of this cycle of Age.

The Institute conducts regular weekly spiritual gatherings, daily prayers and meditation. Every 12th of calendar month, 'Dhuni' (Sacred fire) is being conducted at the institute premises wherein all Baba lovers participate in litting the sacred fire. The institute spreads the love and truth messages of Avatar Meher Baba by bringing out a Tamil bi-monthly journal *Meher Meiyunarvu* (Meher Consciousness).

APPENDIX - I*

A brief summary of the Archaeological Survey on the Excavation of Palaeolithic Sites in the Korattalaiyar River Valley

In the old Korattalaiyar river valley, three terraces at heights of 60, 20 and 8 foots have be noticed. With these and the earlier boulder conglomeratae, the tools were related and thus evolution in the early palaeolithic culture is postulated as follows:-

I. Primary Lateritic Plain: Sterile

II. Boulder Conglomerate

1. *Earliest Group*

   Non-lateritic with heavy cream coloured patina tools rolled but divisible into:-

   a) Early series: Abbevilian hand axe with pebble butt and crude and irregular flaking

   b) Late series: Less patinated hand axes of early Acheutian type marked by step flaking.

2. *Second Group*

   Tools stained red but not patinated. Fine Acheutian hand axes pear and ovate shapes appears.

3. *Third Group*

   No laterite staining - Hand axes by cylinder hammer technique. Ovate with flat step flaking. A few cleavers.

II. A) Attirampakkam Terrace

Along with early forms of hand axes which are generally rolled, very late Achulian type hand axes-thin, flat, elongated and made on flakes. In addition to these hand axes, there are cleavers of all types. Some exhibiting 'Vaal' technique and crose flakind after the 'Sohan' technique.

The top of the loom yields levalloisian like lakes with facetted platform and much primary flaking on the upper surface.

In order to know the exact pre-historic cultural sequence and also corroborate the cultural appendage in the above terraces excavątions ° were carried out at many sites notable among them being Attirampakkam, Gudiyam and Vada Madurai.

Attirampakkam (Tiruvallur Taluk) :-

The excavations carried out in this village over a high cliff overlooking the stream called Pudida-manu-vanka, revealed the following deposits starting from the top.

1.	Surface	:	Microlithic
2.	Brownish skilt	:	Sterile
3.	Detrital Laterite Gravel	:	Post-Acheulian flake industrypoints, Scraper and longish flake-blades.
4.	A. Clay	:	Acheulian tools including Hand axe and cleavers embedded in the Clay.
	B. Sriperumbudur shell	:	Natural formation without any tool assemblage.

Vadamadurai (Tiruvallur Taluk)

The excavtion of the place has revealed the following stratigraphy (top to bottom).-

1.	Lateritic Clay	:	Deposits contain Acheulian tools.

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* Report from the Archaeological Survey of India, Madras Circle, Madras

° The excavations were made by the Archaeological Survey of India

2. Lateritic gravel containing detrited laterite and quartzite boulders.	:	Acheulian tools in manufacturing stages were found in fresh condition.
3. Boulders and gravels in the matrix of sand and clay composed of boulders and gravels of Satyavedu sand stone.	:	A few extremely rolled early Acheulian tools
4. Sriperumbudur Shells	:	Natural formation without any tools appendages.

This site, therefore, shows the industry with a possibility of a redeposited earlier Acheulian industry found in the grave deposit.

Poondi (Tiruvallur taluk)

Excavation in Poondi revealed the following stratigraphy from top to bottom.-

1. Surface	:	Sterile and sandy soil
2. Sheet-gravel, Primary or redeposited	:	Middle stone age tools
3. Redeposited laterite	:	—
4. Sheet-gravel	:	Late Acheulian tools
5. Disconformity, marked by uneven surface of the laterite	:	—
6. Lateritized shale in situ	:	—
7. Basal Sriperumbudur Shale	:	—

Neyveli (Tiruvallur taluk)

Located on the lower peneplain showed the following stratigraphy.-

1. Sandy Surface Soil	:	Sterile
2. Lateritic gravel	:	Middle stone age tools
3. Pebble-deposit	:	Sterile
4. Disconformity, marked by uneven surface of the Shale.	:	—
5. Sriperumbudur Shale	:	—

Gudiyam

The places around Poondi and Guidyam are dotted with a number of rock-shelters and natural cavern which were inhabited, though temporarily by the pre-historic people. There are sixteen such rock-shelters identified, of which two of them yielded tools on the surface. Gudiyam is one of the important rock-shelters where excavations were carried out both inside the rock-shelter and also in the adjoining area. Excavations within the rock-shelter revealed that the tool-bearing horizon extended from the ancient floor-level of the cave to the top silty layers, with a remarkable change in tool-types from the post-Acheulian including an unfinished

hand axe in the lower pebbly gravel to the middle stone age group in the upper strata. Owing to the scanty occurrences of these tools in the excavated deposits, it may be inferred that the occupation of the cave was only incidental, perhaps during the periods of temporary exigencies.

The palaeolithic tools found in this region belong to hand axe tradition of Abbevillio-Acheulian stage. Since, it is available in fairly large quantity in and around Madras Oswald Menghin has applied the term 'Madras Industry'. From the date of first discovery of a tool of this industry by R. Bruce Foot at Pallavaram, innumerable sites have been discovered yielding palaeolithic (early and middle) and mesolithic tools.

APPENDIX - 2

List of Megalithic Sites in Chengalpattu District

Sl. no. 1	Site 2	Taluk 3	Description 4
1.	Arasarkoil	Madurantakam	Urn burial and Megalithic Black-and-Red ware site.
2.	Arayapakkam	-do-	-do-
3.	Attinanam	-do-	-do-
4.	Amirthamangalam	Ponneri	Urn burials.
5.	Attantangal	-do-	-do-
6.	Amandankarnai	Madurantakam	-do-
7.	* Agaram	-do-	Megalithic cists and cairn
8.	* Agaram	Sriperumbudur	-do-
9.	* Amirthamangalam	Ponneri	Megalithic cists and cairn
10.	* Alattur	Chengalpattu	-do-
11.	* Amur	-do-	-do-
12.	* Anur	-do-	-do-
13.	Andavakkam	-do-	Megalithic cairn circles & cists.
14.	* Araiyapakkam*	Tiruvallur	-do-
15.	* Atcharavakkam	Chengalpattu	-do-
16.	* Attantangal	Ponneri	Cairn burial
17.	* Ayyanjeri	Chengalpattu	Megalithic cists and cists with stone circles
18.	* Budur	Madurantakam	Urn burial and Megalithic Black-and Red ware site.
19.	* Chedalpakkam	Ponneri	Megalithic cists.
20.	Cittalamangalam	Madurantakam	Stone circles.
21.	Chellapillaiyar kuppam	Ponneri	Urn burials.
22.	Chikkarayapuram	Sriperumbudur	-do-
23.	* Echchur	Chengalpattu	Megalithic cists and cairns with stone circles.
24.	* Edakunram	-do-	-do-
25.	* Elachur	Sriperumbudur	Megalithic cists and cairns with stone circles.
26.	* Erumaiyur	Sriperumbudur	Megalithic cists and cairns with stone circles.
27.	Guruvinmedu	-do-	Cairn circles.
28.	Gudalur	Madurantakam	-do-
29.	* Guindy	Saidapet	Urn burials.
30.	* Gudalur	Chengalpattu	Megalithic cists and cairns with stone circles.

1	2	3	4
31.	* Guduvancheri	Chengalpattu	-do-
32.	Gunduperumbedu	Sriperumbudur	-do-
33.	Kalanipakkam	Madurantakam	Megalithic cairns and cists.
34.	Kilvalan	Madurantakam	Urn burial and Megalithic Black-and-Red ware site.
35.	Karigili	-do-	Karingin stone circles.
36.	Kulattur	-do-	-do-
37.	Kallumedu	Tiruvallur	Urn burial
38.	Kulattur-Padupakkam	Chengalpattu	-do-
39.	Kumili-Otivakam	-do-	-do-
40.	Kadamalaiputhur	Madurantakam	Chromlecs.
41.	* Kadamalaiputhur	-do-	Cairns in the RF at the foot Perambair hills
42.	* Kadapperi	-do-	Megalithic cists and cairns.
43.	* Kalathur	Chengalpattu	-do-
44.	* Kalvay	-do-	-do-
45.	* Kanakapattu	-do-	-do-
46.	* Kandalur	-do-	-do-
47.	* Karanaithangal Porinjambakkam	Sriperumbudur	-do-
48.	* Kattamputtur	Kancheepuram	-do-
49.	Kongaraimambattu	Madurantakam	Megalithic stone circles.
50.	* Kilamapakkam	Chengalpattu	Megalithic cists and cairns.
51.	* Kottamedu	Chengalpattu	Megalithic cists and cairns.
52.	* Kumili	-do-	-do-
53.	* Kunnathur	-do-	Megalithic cists and cairns on the hill
54.	* Kunnavakkam	-do-	Megalithic cists and cairns.
55.	* Kuravanmedu	-do-	-do-
56.	Kunnavakkam	Madurantakam	Megalithic stone circles & cists.
57.	Mettupalaiyam	Saidapet	Urn burials.
58.	Malaipattu	Sriperumbudur	-do-
59.	Manamai	Chengalpattu	-do-
60.	Malaivaiyavur	Madurantakam	-do-

1	2	3	4
61.	Mangalam	-do-	Megalithic cairns circles and cists.
62.	Mampattu	-do-	Cairn circles.
63.	Morapakkam	-do-	-do-
64.	Maiyur	-do-	Urn burial and Megalithic Black and Red ware site.
65.	* Madayathur	Chengalpattu	Megalithic cists and cairns.
66.	* Meganiyam	Sriperumbudur	-do-
67.	* Mamallapuram	Chengalpattu	Two unfinished excavations near the light house.
68.	* Mailai	-do-	Megalithic cists and cairns.
69.	* Malaipattu	Sriperumbudur	-do-
70.	* Malaivaiyavur	Madurantakam	-do-
71.	* Mampattu	-do-	-do-
72.	* Manamai	-do-	-do-
73.	* Melkottaiyur	Chengalpattu	-do-
74.	* Moosaivakkam	-do-	-do-
75.	* Nallur	Ponneri	Urn burials.
76.	Nandivaram	Chengalpattu	Urn burials.
77.	Nallikuppam-Vembedu	-do-	-do-
78.	* Naduvakkārai	-do-	Megalithic cists and cairns.
79.	* Nandambakkam	Saidapet	-do-
80.	* Nandivaram	Tiruvallur	Megalithic cists and cairns.
81.	* Nanmangalam	Saidapet	Group of cairns.
82.	* Nattam	Chengalpattu	Megalithic cists and cairns.
83.	* Nedungunram	-do-	-do-
84.	* Nellikuppam	-do-	-do-
85.	* Neyveli	-do-	-do-
86.	* Olalur	-do-	-do-
87.	* Ottivakkam	-do-	-do-
88.	* Ottiyambakkam	Saidapet	-do-
89.	* Olalur	Chengalpattu	-do-
90.	* Badur	-do-	-do-
91.	* Palavakkam	Ponneri	Urn burials.

1	2	3	4
92.	* Palayasivaram	Kancheepuram	Megalithic cists and cairns.
93.	* Pallavaram	Saidapet	-do-
94.	* Palliyagaram	Madurantakam	-do-
95.	* Pammadukulam	Saidapet	Megalithic cists and cairns.
96.	* Panchali	Ponneri	-do-
97.	* Pandur	Chengalpattu	-do-
98.	* Paranur	-do-	-do-
99.	* Paranur	-do-	-do-
100.	* Perumbakkam	Kancheepuram	-do-
101.	* Perunagar	-do-	-do-
102.	* Perungalathur	-do-	-do-
103.	* Pondavakkam	Ponneri	-do-
104.	* Ponmar	Chengalpattu	-do-
105.	* Porundavakkam	Chengalpattu	Megalithic cists and cairns.
106.	* Pottur	Saidapet	-do-
107.	* Pudupakkam	Chengalpattu	-do-
108.	* Pulal	Saidapet	Prehistoric settlement site megalithic periods
109.	* Pulipakkam	Chengalpattu	Megalithic cists and cairns.
110.	* Pundi	-do-	-do-
111.	Punjeri	Thirukalikundram	Megalithic stone circles and urn-burials.
112.	Puludivakkam	Madurantakam	Megalithic cairn circles and cists.
113.	* Padalam	-do-	Urn burial and Megalithic Black and Red ware site.
114.	Pattur	-do-	-do-
115.	Palveri	Sriperumbudur	Cairn circles
116.	Padiri	Madurantakam	-do-
117.	Perumbadu	Ponneri	Urn burials.
118.	Palavakkam	Tiruvallur	-do-
119.	Puttur	Saidapet	-do-
120.	Pulal	-do-	-do-
121.	Padur	Chengalpattu	-do-
122.	Pudupattu	Madurantakam	Megalithic cists.
123.	* Rajakulipettai	Chengalpattu	Megalithic cists and cairns.
124.	* Rayalapattu	-do-	-do-

1	2	3	4
125.	Reddikuppam	-do-	Urn burial.
126.	Sambadinallur	Maduranthakam	Urn burial and Megalithic Black and Red ware site
127.	Siroppanaiyur	-do-	-do-
128.	Sitapuram	-do-	Cairn circles.
129.	* Sanur	-do-	Megalithic cists and cairns.
130.	* Sastirambakkam	Chengalpattu	-do-
131.	* Sembakkam	-do-	-do-
132.	* Sembakkam	Sriperumbudur	Group of cairns and cists.
133.	* Sengarai	Tiruvallur	Cairn site.
134.	* Sengunram	Chengalpattu	Megalithic cists and cairns.
135.	* Settipuniyam	Chengalpattu	Megalithic cists and cairns.
136.	* Settupatti	Kancheepuram	-do-
137.	* Sikkarayapuram	Saidapet	-do-
138.	* Sirudavur	Chengalpattu	-do-
139.	* Sirukalattur	Kancheepuram	-do-
140.	* Sirukunram	Chengalpattu	-do-
141.	* Siruvadu	Ponneri	-do-
142.	* Sittalapakkam	Saidapet	-do-
143.	St. Thomas Mount	-do-	Urn burial and Megalithic site.
144.	Siruvadu	Ponneri	Urn burial.
145.	Sengarai	Tiruvallur	-do-
146.	Sempakkam-Kotta-malai	Chengalpattu	-do-
147.	Sanur-Ariayapakkam	Madurantakam	-do-
148.	Surai	-do-	Megalithic cairn circles & cists.
149.	Trisulam	Tiruvallur	Urn burial.
150.	Tirupporur	Chengalpattu	-do-
151.	Tandalam	Maduranhakam	Urn burial and Megalithic site Black and Red ware site.
152.	* Tadipudi	Ponneri	Megalithic cists and cairns.
153.	* Tandalam	Chengalpattu	-do-
154.	* Tattanur	Sriperumbudur	-do-
155.	* Tiruneermalai	Saidapet	Group of cairns.

1	2	3	4
156.	* Tiruneermalai	-do-	Megalithic cists.
157.	* Tirupporur	Chengalpattu	-do-
158.	* Tirusulam	Saidapet	Megalithic cists and cairns.
159.	* Tiruvadisulam	Chengalpattu	-do-
160.	* Tiruvadaisulam	-do-	-do-
161.	Ullavur	Kancheepuram	Urn burials.
162.	* Unamanjori	Chengalpattu	Megalithic cists and cairns.
163.	* Uttiramerur	Kancheepuram	Dolmens site
164.	* Vadakkupattu	Ponneri	Megalithic cists and cairns.
165.	* Vadamangalam	Sriperumbudur	-do-
166.	* Vaiyur	Kancheepuram	-do-
167.	* Vanamalli	Ponneri	-do-
168.	* Vandalur	Chengalpattu	Megalithic cists.
169.	* Vendanarayana-puram	-do-	-do-
170.	Vembedu	Chengalpattu	Megalithic cists.
171.	Vengur	-do-	-do-
172.	Venkitapuram	-do-	-do-
173.	Venpakkam	-do-	-do-
174.	Venpakkam	Kancheepuram	-do-
175.	* Virakuppam	Chengalpattu	Megalithic cists.
176.	* Virappuram	-do-	-do-
177.	* Vedanthangal	Madurantakam	Cairn circles.
178.	Valiyaputhur	-do-	Stone circles.
179.	Vadamangalam	Sriperumbudur	Urn burials.
180.	Vandalur Hill	Chengalpattu	-do-
181.	Vilangadu	Madurantakam	-do-

* These are Protected Megalithic Sites by the Archaeological Survey of India

APPENDIX - 3*

Civil Disobedience Diary of the Chingleput district

28 December 1929. Display by the Bharat Yuvak Sangham at Avadi.

29 December 1929. Indian National Congress. Session commences at Lahore.

31 December 1929. Independence resolution passed at Lahore. Independence day not celebrated anywhere in this district.

February 1930. Swarajist member resigns. A candidate with no label is returned unopposed.

12 March 1930. Gandhi commences his march at Ahmedabad.

13 March 1930. Abdul, Subbanna and Chakrapani - Ayyangar speak at a festival at Sriperumbudur about the Congress programme. Effect of the speeches - nil.

28 March 1930. Subbanna and Abdul Kadar, local men of Sriperumbudur, deliver speeches. The effect was very little. A few Madras youth leaguers hold a meeting in the mango tope at Paruthipattu and hoist the Home Rule flag. Durgabai and Mrs. Lakshimipathi, two ladies speak. Village Munsif Paruthipattu, reported to have harboured them, is receiving the attention of the District Magistrate. On or about this time, two Congress volunteers visit Semmenjeri, Saidapet taluk, and distribute pamphlets.

6 April 1930. National Week. Nothing happens in this district.

17 April 1930. A batch of 13 satyagrahis from Madras march to Sholinganallur and address meetings. Villagers are not affected. The volunteers appear to have made a salt pan.

18 April 1930. District Magistrate proceeds to Sholinganallur village. The Sub-Divisional Magistrate, the Stationery Sub-Magistrate and the Reserve Police are already there. One more pan is made by the volunteers. Canal water is boiled and very small quantity of salt is made. Sankar, a leading volunteer, addresses the villagers. Prakasam arrives in a motor car from Madras and addresses for 5 minutes. The pans at Sholinganallur yielding no salt, the volunteers cast an eye on Thiruvanmiyur near by. A salt Inspector with six peons stay here.

18 and 19 April 1930. Muthuranga Mudaliyar, the Swarajist M.L.C. who resigned, Shafi Muhammad, a Muslim Swarajist of Madras, and Bashyam Ayyangar, a Congressman and Advocate of Madras, Advocate foreign cloth boycott at the festival at Thirunirmalai.

26 April 1930, Muthuranga Mudaliyar, the ex-M.L.C., speaks at Poonamallee about foreign cloth boycott.

28 April 1930. Sholinganallur salt pans drained off by Salt peons, fresh pans are prepared at Semmenjeri, a village nearby. The threatened resignation of the village munsif is reported. The villagers evince sympathy to the volunteers. The Reserve Police encamped in the village are jeered at. District Magistrate decides to take more severe action. Appadurai Naicken of the village is convicted under section 143 I.P.C. by the Sub-Divisional Magistrate, Saidapet, and released on tendering apology. District Magistrate decides to take action against Shankar and Swami Shanmugananda. A volunteer from the Hindustan Seva Dal speaks. Pans made at Semmenjeri by the volunteers are destroyed.

2 May 1930. Durgabai, Mrs. Lakshmipathi and Bakthavatsalam visit the place. Workshop labourers decide to march in a procession with pots to the beach. The Sub-Magistrate, Saidapet, issues an order under section 144 Cr. P.C. to take effect within a radius of five miles of the place. Procession abandoned.

5 May 1930. Gandhi's arrest at Dandi.

6 May 1930. Shankar and Shanmugananda, two volunteers at Sholinganallur, are convicted and sentenced to six months' rigorous imprisonment each by the Sub-Divisional Magistrate, Saidapet. Thambu takes the place of the convicted leader. Hartal observed over Gandhi's arrest in almost all the important places except Saidapet; nothing untoward happens.

9 May 1930. Meeting of loyalists convened by District Magistrate. Only a select few are invited but the meeting becomes an overflow one. It is decided to form committees and carry on counter-propaganda by means of private talks, lectures, etc. Silver vessels to village officers and cash to village menials are presented by the District Magistrate at the meeting for their good work during the Satyagraha Movement.

2 June 1930. Villagers hold meeting in Sholinganallur in defiance of order under section 144 CR.P.C. Police disperse assembly. Mob abuse police and pelt stones are seriously injure some policemen. Police open fire. One villager dies and two are injured. District Magistrate and District Superintendent of Police visit locality. Rounds fired 37.

6 June 1930. Chairman, Municipal Council, holds counter-propaganda meeting.

9 and 10 June 1930. Attempts are made to hold Congress meetings at Madirpakkam and Manallur. The Station Sub-Magistrate and Sub-Inspector frustrate it. Four persons are charged under the Town Nuisance Act and convicted. Situation quietens down.

10 and 11 June 1930. Meetings are held at Javalikadai choultry at Conjeevaram by Congressmen.

11 June 1930. The seven stone-throwers of Peravallur are convicted, but released on probation of good conduct.

16 June 1930. Irusappa Naicken of Sholinganallur is awarded three months' rigorous imprisonment by the Stationary Sub-Magistrate, Saidapet, under section 145, I.P.C., for harbouring satyagrahics at Sholinganallur.

17 June 1930. M.R. Ry. D.K. Ramiah Naidu, President Taluk Board, Trivellore, holds a meeting for counter-propaganda.

20 June 1930. Muslims of Trivellore condemn the civil disobedience movement in a meeting.

22 June 1930. District Magistrate and District Superintendent of Police are at Kancheepuram. A Reserve Police party are also there.

9 May 1930. Abdul Kadar, a mere loafer, convicted by the Sub-Divisional Magistrate for one year. He is raised to Moulaniship by the Swarajya and the Hindu.

10 May 1930. D. Venkatasubba Rao and Kunjuvaram final attempt a meeting at Sembiam. Police disperse the meeting. The two are arrested and released at 10 p.m. under 63 Cr.P.C.

11 May 1930. D. Venkatasubba Rao persists' in attempting to address a meeting. He is taken into custody and the meeting dispersed by the police. Stones are pelted at them while they board bus.

12 May 1930. Seven of the stone-throwers are arrested and released on bail. (These are released later under section 562 (1) Cr.P.C. on furnishing security and expressing regret.) Departure of some volunteers at Rajokolam and Sriperumbudur is reported.

D. Venkatasubba Rao is convicted to six month's regorous imprisonment by the Sub-Divisional Magistrate, Trivellore. (This is later reduced to four months on appeal to the Sessions Judge. Prior to this he tendered an apology).

15 May 1930. Jamadagni Naicker, who was prominently, figuring at Sholinganallur, is charge-sheeted, convicted and sentenced to one year's rigorous imprisonment (117 I.P.C. and 74 Salt Act) by the Sub-Divisional Magistrate, Saidapet.

16 May 1930. Order under section 144 Cr.P.C. by the Stationary Sub-Magistrate, Saidapet, continues in force. Satyagrahi shed at Sholinganallur pulled down and the Satyagrahis bundled out.

19 May 1930. Ponnan Ganapathi Naicken of Sholinganallur is convicted for harbouring Satyagrahis but he is released on probation of good conduct under section 562 (1) Cr.P.C.

20 May 1930. Visits of satyagrahis to Sholinganallur, Saidapet and other places continue. As often as they appear, so often are they bundled out.

23 June 1930. M.R. Vedantham and Narasimha Murthi are convicted by the Stationary Sub-Magistrate, Chingleput, and sentenced to six months'. rigorous imprisonment each under section 188 I.P.C. for having disobeyed at Kancheepuram an order under section 144 Cr.P.C. Attempts are made to hold a Congress meeting at Chengalpattu.

24 June 1930. Another anti-civil disobedience meeting is held at Madirpakkam. Revenue Divisional Officer and Tahsildar, Saidapet, take part. Reports of meetings at Ponneri, Sriperumbudur, Ramanjeri, Karunguzhi, Poonamallee and other places are received.

26 June 1930. Quiet prevails at Sholinganallur. Volunteers at Kancheepuram and Uttiramerur are bundled out.

28 June 1930. Personal talks with leading and prominent citizens about the detrimental nature of the civil disobedience movement are carried on.

1 July 1930. Five people hold a Congress propaganda meeting in Kancheepuram attended by about 75 persons. No enthusiasm in the meeting.

5 July 1930. Another is held on 5 July 1930 and want of enthusiasm is lamented by the speakers. Order under section 144 Cr.P.C. is served on three volunteers and they leave the place. Two others are locals. Policy of counter-propaganda meetings is abandoned and private talks carried on where necessary.

7 July 1930. A counter-propaganda meeting is held at Gummudipundi as per previous programme.

19 July 1930. A takli procession in Conjeeveram is held 50 persons attend. 200 persons attend the evening meeting. A Swarajist municipal councillor speaks about boycott, foreign cloth etc. Varahalu Ammal speaks. Subsequently she tenders apology but only to break her word later.

22 July 1930. A volunteer from Uttiramerur and another from Madurantakam are bundled out.

23 July 1930. Varahalu Ammal convicted and sentenced to six months' simple imprisonment under section 117 I.P.C. and 74 Salt Act.

28 July 1930. Three more volunteers are convicted in Kancheepuram under section 143 I.P.C.

1 August 1930. Apology received from Mr. Venkatasubba Rao who was convicted on 12 May 1930.

11 August 1930. C. Sitharama Ayyar is convicted at Saidapet of an offence at Kancheepuram. One year rigorous imprisonment is awarded under section 117 I.P.C. and section 26 M.F.A. Arrack sales at Conjeevaram are successful. Satyagrahis are kept at respectable distance from the sales.

15 August 1930. C. Sitharama Ayyar's tender of apology is received. (His apology is later recommended for rejection as his antecedents were bad).

1 September 1930. Upendra Pai is convicted and sentenced to six months' rigorous imprisonment by the Sub-Divisional Magistrate, Saidapet (117 I.P.C.).

31 October 1930. Nine rioters of Sholinganallur are convicted to various terms of imprisonment by the Revenue Divisional Officer, Saidapet.

The civil disobedience movement has been stamped out of this district*.

* British Govt. Version

Number of persons sentenced to imprisonment from 1 April 1930 up to date

Name	*Age*	*Date of conviction*	*Period of conviction months*	*Jail classification*	*Section under which convicted*
1	*2*	*3*	*4*	*5*	*6*
	Yrs.	1930			
Shankar	26	6 May	6 R.I.	B	117 I.P.C. and 74 Salt Act.
Shanmukananda	53	6 May	6 R.I.	B	-do-
Duggirala Venkatta SubbaRao	32	12 May	6 R.I.	B	145 I.P.C.*
Jamadagni Naicker	27	15 May	12 R.I.	C	117 I.P.C. and 74 Salt Act.
Abdul Kadir Sahib	52	9 May	12 R.I.	C	-do-
Irusappa Naicken	30	16 June	3 R.I.	C	145 I.P.C.
M.T. Vedantham	23	23 June	6 R.I.	C	188 I.P.C.
Narasimha Murthi	32	23 June	6 R.I.	C	-do-
Varahalu Ammal	25	23 July	6 S.I.	B	117 I.P.C. and 74 Salt Act
Vaithyanatha Ayyar	26	24 July	6 R.I.	C	143 I.P.C.
Narayana Ayyar	20	24 July	6 R.I.	C	-do-
1	2	3	4	5	6
Ramakrishna Pillai	21	24 July	6 R.I.	C	-do-
C. Sitharama Ayyar	50	11 Aug.	12 R.I.	C	117 I.P.C. and 26 M.F.A.+
Upendra Pai	38	1 Sep.	6 R.I.	B	117 I.P.C.
Natesa Naicken	32	31 Oct.	9 R.I.	C	147 and 332 I.P.C.
Muthukannu Naicken	30	31 Oct.	9 R.I.	C	-do-
T. Duraiswami Naicken	40	31 Oct.	3 R.I.	C	147 and 332 I.P.C.
Angu Naicken	35	31 Oct.	3 R.I.	C	-do-
Srinivasalu Naicken	28	31 Oct.	3 R.I.	C	-do-
Kosala Rama Naicken	20	31 Oct.	3 R.I.	C	-do-
Duraiswami Naicken	40	31 Oct.	3 R.I.	C	-do-

1	2	3	4	5	6
Kullappa Naicken	30	31 Oct.	3 R.I.	C	-do-
Singara Naicken	36	31 Oct.	3 R.I.	C	-do-

*Reduced to four months on appeal. Tenders apology also.

+Reduced on appeal. Also tenders apology.

Source : The Civil Disobedience Movement - 1930-31 (British Version) Tamilnadu Archives. (Extract of original Report re-produced)

District Magistrate's Accounts of the Movement in the district :

1. Sholinganallur: A batch of 13 salt Satyagrahis from Gudiyattam arrived in Madras on 17 April 1930 and proceeded to Sholinganallur, a village in this district 7 miles from Lattice Bridge. The police and the magistracy were already on the spot, having been previously apprised of the event. The Satyagrahis dug a pan about 6"x4" and stocked canal water in the hope of getting salt. They stayed in a casuarina tope near the village. A prominent volunteer delivered a lecture to an audience of about 70 to 80 people. On 18 April finding the canal water not yielding salt, they made another pan in the hope of better results. There was a lecture again that day, Prakasam of Madras arrived in a motor car with two others and delivered a lecture. He brought provisions for the volunteers staying in the village. On 19 April a man named Rangayya Nayudu made a speech exhorting the people to follow Gandhi and not to be afraid of the police. The villagers helped the volunteers with materials and a shed was put up. On 21 April 1930 a batch of 13 more volunteers joined the camp. Four more pans were made but with no good result. Copies of Tamil translation of Gandhi's letter to H.E. the Viceroy were distributed to the villagers. On 24 April ten more volunteers joined the camp. The next day, the bunds of the pans were removed by the authorities. Swami Shanmugananda delivered a lecture to about 150 of the villagers. By this time, the volunteers appear to have enlisted their sympathy. The salt pans at Sholinganallur having proved a failure, more pans were prepared some 2 or 3 miles away in Sommenjeri village but they were destroyed by Salt peons. The volunteers made eight more pans the next day and filled two of them with salt water. In Sholinganallur, they made six pans with the help of the villagers. Finding that the villagers began to help the volunteers, I got an influential man charge-sheeted. It had the desired effect. He at once expressed regret and he was released under section 562 Cr.P.C. On 28 and 29 April, some more pans were made in Sommenjeri but they were destroyed by the authorities. On 30 April, Mrs. Lakshmipathi, Durgabai, Bakthavatsalam and a few others arrived from Madras and spoke about foreign cloth boycott, Prohibition and Swadeshi. Ten of the volunteers left for Madras and ten more took their places. On 6 May 1930, two volunteers, Shankar and Swami Shanmugananda, were convicted and sentenced to six months' rigorous imprisonment each by the Sub-Divisional Magistrate, Saidapet, under 117 I.P.C. and 74 Salt Act. This was the beginning of imprisonments in this district. One Thambu took the place of the imprisoned men. A villager Ponnan Ganapathi Naicker was charge-sheeted before the Stationary Sub-Magistrate for harbouring the Satyagrahis. An order under section 144 Cr.P.C. was promulgated by the Stationary Sub-Magistrate, Saidapet applying it to the whole taluk and the volunteers were cleared out of the place by the police on 16 May. The shed put up for their sojourn was dismantled. The volunteers began to frequent the village and other places in Saidapet taluk but as often as they appeared so often were they arrested and put into a bus and dropped on the road some miles off. This ended the activities of the volunteers but on 2 June about 150 to 200 of the villagers assembled behind the village temple under the leadership of one Muthukannu Naicken of the place to hold a meeting in defiance of the order under section 144 Cr.P.C. The Sub-Inspector and his men ordered the assembly to disperse. The villagers dispersed but assembled again and threw stones and brickbats at the police. A Jamodar and three constables were injured. Fire was opened and the villagers dispersed. When the police were returning the villagers again followed them in the rear and pelted stones at them. Fire was opened again and again the villagers dispersed. The police on their way back to their camp entered a casuarina tope when the villagers for a third time attacked them. The police again fired and finally cleared the villagers. On the whole nine buck shots and 28 ball cartridges were fixed. But only one was killed and two wounded. Because it was night time and the villagers were protected by the casuarina tope. Twelve policemen were injured, four of them rather badly. After this quiet was restored and Sholinganallur saw the end of the Satyagraha activities. The reserve force there was withdrawn during the last week of June 1930. One Irusappa Naicken of the village was convicted on 16 June. Nine of the riotors of 2 June were convicted on 31 October.

2. Kancheepuram: Dr. Srinivasan, a Swarajist Municipal Councillor, was joined by a few volunteers from outside and two meetings were held one on the 10 of June and the other on the next day at Javalikadai choultry in Kancheepuram. On each occasion about two to four hundred people attended. Another meeting was notified for the 12. Hence an order under section 144 Cr.P.C. was served on four persons. Two of them, Vedantham and Narasimha Murthi, subsequently disobeyed the order. They were eventually convicted and sentenced to 6 months' rigorous imprisonment each on 23 June. Reserve Police were moved to the place. The volunteers who have made Kancheepuram their temporary head-quarters were removed from there. On 1 July some people held a meeting and on 5 July another meeting was held. An order under section 144 Cr.P.C. was served on them. Three of them left the place at once. The others were local men. On 19 July there was a Takli Procession. It was attended by about 50 persons. Subsequently in the evening there was a meeting at which about 200 people attended. Dr. Srinivasan spoke about khaddar, boycott, etc. Two others followed him. On the evening of 22 July there was a meeting attended by about 50 people. Varahalu Ammal spoke at the meeting. She was promptly prosecuted under 117 I.P.C. read with section 74 Salt Act, and was convicted by the Stationary Sub-Magistrate, Kancheepuram, on 23 July and sentenced to 6 months simple imprisonment. The next day, three people deliberately formed themselves into an unlawful assembly with some others for breaking salt law. They were charge-sheeted immediately and convicted the next day. Some local townsmen attempted to orally dissuade the renters from taking the shops at an arrack sale in August. But as these people were kept at a very respectable distance the result of their persuasions was nil. On 11 August one Sitharama Sarma a local man, was convicted under section 117 I.P.C. and 26 N.F.A. and sentenced to one year's rigorous imprisonment. He later on tendered an apology but it was not accepted. In the meanwhile, he preferred an appeal to the Sesssions Judge and got his conviction reduced to two months. The town is now quiet.

3. Sembiam: On information furnished by the Police that the workshop labourers of the M. & S.M. Railway Company intended to start a procession on the 3 of May with pots to go to the Madras beach to perpare salt the Subdivisional Magistrate, Saidapet issued an order on 2 May under section 144 Cr.P.C. prohibiting processions and meetings in Sembiam and within 5 miles of it. On a wire received by me at Trivellore from the District Superintendent of Police. I proceeded to the spot on the 3 morning and found the labourers still undecided over the procession. Finally the procession did not come off. Things went on smoothly till the 10 evening when one D. Venkatasubha Rao, a Congress volunteer and another attempted to address a meeting at Agaram within the prohibited area but the police dispersed the meeting. The two men refused to move. They were arrested and placed before the Stationery Sub-Magistrate, Saidapet who released them under section 63 Cr.P.C. at 10 p.m. The next day Venkatasubba Rao repeated the offence. The meeting was promptly dispersed and he was arrested. As the Police were getting into motor buses to go to back to the station, stones were pelted at them by the crowd and a slight injury was caused to a policeman. There upon the police arrested and charge sheeted them before the Stationary Sub-Magistrate, Saidapet.

They were, however, released under section 562(1) Cr.P.C. after executing bonds with sureties. Since then, the situation has been quiet at Sembiam.

4. Chingleput: Vedantham and Narasimha Murthi were convicted by the Stationary Sub-Magistrate, Chingleput, for offences they committed in Kancheepuram. This was on 23 June 1930. Soon after the convictions the volunteers who came to watch the proceedings announced a meeting for the evening. Orders under section 144 Cr.P.C. were promptly issued and the meeting dispersed. A general order under section 144 Cr.P.C. had to be issued subsequently and a reserve party of police were also stationed there to meet eventualities. Nothing worthy of note happened afterwards.

5. Satyavedu: An attempt was made to hold a meeting on the 9 and 10 of June in the villages of Madirpakkam and Manallur respectively of Sathiyavedu division. But no meeting was allowed to be held on these dates as the Sub-Magistrate and the Sub-Inspector of Police dispersed it. Four persons were however charged under the Towns Nuisance Act and fined. With this, the trouble here ended.

APPENDIX - 4

Freedom Fighters of the District

***Achari, E. Narayana:** b. June 1906 - Joined the movement in 1928 - Took part in Salt Satyagraha, 1930, Toddy Shop picketing, 1932 and Individual Satyagraha Movement 1940-41. Sentenced to 6 months in 1942 - Address: Bazaar Street, Tiruttani.

2. Alagesan, O.V. Ozhalur Viswanatha Mudaliar:

b. September 6, 1911 - While he was a student in Presidency College, Madras, he left his studies and joined the Vedaranyam Satyagraha - vice-President of the Chingleput District Board from 1938 till he left it to join the Individual Satyagraha and Quit India Movement in 1941-42 - arrested and sentenced to 6 months in 1930 and kept in Tiruchirappalli jail - courted imprisonment again in 1941 and kept in Bellary and Alipuram jails for 10 months - arrested again 1942 and kept as detenu under Defence of India Rules in Vellore and Thanjavur special jails for 2 years and 2 months - was Secretary of the Tamil Nadu Congress Committee - came a member of the Constituent Assembly in 1946, and later the Provisional Parliament was Minister twice in the Government of India - President, T.N.C.C. - Ambassador Ethiopia - At present Member of Parliament - Address: Vedachala Nagar, Chengalpattu.

3. Ammavasi: b. 1903 - Cultivator - Took part in Quit India Movement, 1942 - arrested and sentenced to 9 months under Defence of India Rules - Kept in Alipuram jail.

4. Arumugam S. Samiyar: Took part in August Movement, 1942 - arrested and sentenced to 9 months under Defence of India Rules in 1942 - Kept in Alipuram jail.

5. Arunachalam: s. Ellappa Mudaliar: b. 1924 - literate - Took part in August Movement, 1942 - arrested and sentenced to eight months under Defence of India Rules - Kept in Alipuram jail - was Secretary, Town Congress Committee. Address: 25-A, Addisonpettai Chetty Street, Kancheepuram.

6. Asari, Sankaranarayana - Arressed for seditious speeches and sentenced to eight months under Defence of India Rules in 1941 - Kept in Central jail, Madras - Address: Pettai.

7. Ayyangar, Desiga *alias* **Desigan:** Took part in the August Movement in 1942 - arrested and sentenced to two months - Address: Yadhothkari Sannadhi Street, Little Kancheepuram.

8. Ayyar, Ramalingam, M.J. -s. V. Jambuswami Sastri: Took part in August Movement in 1942 - convicted and sentenced to two years under Defence of India Rules - kept in Alipuram and Salem Jails - was associated as Editor of "ANUMAN" - popular short story writer under the pen name 'Rali'.

9. Ayyar, Srinivasa, S.S. Subramani Iyer: Took part in the August Movement in 1942 - prosecuted for distribution of prejudicial pamphlets - Address. Sriperumbudur.

10. Balabarathi: L.M. *alias* **L. Munuswami:** b.6.8.1918 - joined the movement in 1940 - Took part in individual Satyagraha Movement 1940 - courted imprisonment and kept in Warangal and Madras jails for 7 months during 1939 - Address: Prodetturpet, Tiruttani taluk.

11. Balasundaram - s Subba Naicker: b. 10.5.1900 - Joined the Movement and took part in non co-operation movement, 1921 - arrested and sentenced to three months and kept in Vellore jail - Address: 144, Chinnamman Koil Street.

12. Bangaru - s. Chengalvaraya Raju: b;. 1918 - Took part in Quit India Movement 1942 - arrested and sentenced to 3 months under Defence of India Rules in 1943 - Kept in Alipuram jail - Addres: Thiruvothiyur.

13. Bashyam-s. Naravanasami: Joined and took part in Salt Satyagraha Movement, 1930 - arrested and sentenced to 1 year in 1930 - kept in Trichy jail - Address: Chingleput district.

14. Chackaral *alias* **Rajarathina Mudaliar - s. Swami Mudaliar:** - Took part in Civil Disobedience Movement - arrested and sentenced to one year under Sec.13(a) of S.P. Act of 1941 in 1942 - Kept in Vellore central jail- Councillor for a long time - also acted as Chairman - Died - Address: Putheri Street, Kancheepuram.

15. Chakkarapani *alias* **Chinnathambi Koundan:** b. 1895 - Took part in Salt Satyagraha Movement, 1930 - arrestsed and sentenced to one year under Sec. 123 Cr.P.C. in 1930 - Kept in Vellore Central jail - Address: Thinnanallur, Madurantakam.

16. Chakravarthi: Took part in August Movement, 1942 - Courted imprisonment for the distribution of prejudicial leaflets - Address : Kancheepuram.

17. Chakravarthi-s. Govindasamy: b. 25.8.1916-e. literate - Joined the movement in 1942 - Took part in 1942 movement - arrested and sentenced to 6 months in 1943 - detained in the jail on release - Kept in Alipuram, Vellore and Thanjavur jails - detenu for one year-was president, Conjeevaram Taluk Congress Committee - Address: 46, Kamakshiamman Sannadhi Street, Kancheepuram.

18. Chandrasekaran, M.R. : b.1.1.1920-e.B.Sc., M.B.B.S.- Joined the Movement in 1939 - Took part in Antiwar Movement, 1940 and Quit India Movement, 1942 Courted imprisonment and kept in Vellore and Madras jails - Left the Congress in 1943 - Address: 37, Villakkadi Koil Street, Little Kancheepuram.

19. Chettiar. S.K.N. Adikesavalu: b.1895 - Joined the Movement in 1936 - Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942 - arrested and sentenced to 1 month in 1941 and was kept in Vellore, Canannore and Thanjavur jails as detenu for 19 months in 1942-44 - Died in 1964 - Address: Vilakakdi Koil Street, Kancheepuram.

20. Chettiar, Alagirisamy: Took part in Toddy shop picketting at Bodinayakanoor - shot dead by bullet before the shop on 7 August 1930.

21. Chettiar, Arunachala: Took part in August Movement in 1942 - one among the accused in Saidapet fuel depot looting case - Address: Saidapet, Chingleput district.

22. Chettiar, Duraisamy c. Subbiah Chetty: Took part in Civil Disobedience Movement, 1932 - arrested and sentenced to one year - kept in Tiruchirappalli jail.

23. Chettiar, Nalli Kesava: b. 1910 - Joined the movement in 1937 - Took part in Individual Satyagraha in 1941 - Courted imprisonment - kept in Madras Central jail for one month - Address: 26, Reddipettai, Kancheepuram.

24. Chettiar, M. Natesa: Joined the movement in 1922 - Took part in Non Co-operation Movement, 1922 - Toddy shop picketting and Foreign cloth boycotting, 1931 - Died in 1937 - Address: 5, Aladi Pillaiyar Koil Street, Kancheepuram.

25. Chettiar, P. Pulliah: b. 1899 e. literate - Joined the movement in 1941 and took part in Individual Satyagraha - Arrested and kept in central jail, Madras for three months in 1941 - was Secretary, Taluk Congress Committee - Address: Vellavedu village, Ponneri taluk.

26. Chettiar, Subbarayalu: b. 1894. - Joined and took part in Salt Satyagraha, 1930 - courted imprisonment and kept in Madras and Alipuram jails for 6 months - Address: Arambakkam village; Gummudipoondi.

27. Chettiar, S.Venkatappa: S.Venkitarama Chetty: b. 1907 - Took part in Civil Disobedience Movement 1932 - arrested and sentenced to 9 months under Sec.4 of Ordinance Act - kept in central jail, Cannanore - Address: Thirukkazhukunram.

28. Chinnasamy: b. 1906 - Joined and took part in Foreign cloth boycotting 1931 - arrested and sentenced to 6 months - Kept in Madras Central jail - Died in 1961 - Address: Raja Street, Conjevaram, Chingleput District.

29. Chinnasamy, A.T.: b.1900 - Joined the Movement in 1924 - Took part in Individual Satyagraha, 1941 - Courted imprisonment and kept in Vellore jail for 3 months. Address: Damal village, Kancheepuram taluk.

30. Chokalingam, N.: Joined the Movement in 1942 - Took part in Quit India Movement, 1942 - Courted imprisonment - Kept in Banaras and Allahabad jails for 2 years and 3 months - Address: 258, Raja Street, Walajabad.

31. Desigar, Chandresekara-s Subraya Desigar: b. 1906 - Took part in Individual Satyagraha, 1941 and August Movement, 1942 - arrested, and sentenced to 3 1/2 months in 1941 and again arrested and sentenced to one year in 1942 under Defence of India Rules-Kept in Alipuram jail - Address: Ozhalur.

32. Devarajan -s. Govinda Chetty: b. 1907 - Took part in Civil Disobedience Movement in 1951 - arrested and sentenced central jail - Address: Kancheepuram.

33. Devarajan, K.N.: b. 25-6-1918 - Joined the movement in 1936 - Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942 - Address: 30, Nimanathakara Othaivadai Street, Big Conjeevaram, Chingleput district.

34. Dhanapal.D.: b. 1905 - Took part in Civil Disobedience Movement, 1932 - arrested and sentenced to 3 months under Sec.18 clause (1) of Act 23 of 1931 - Kept in central jail Madras - Address: Kancheepuram.

35. Dharmalingam: b. 29.6.1918 - Took part in the Freedom Movement from his school days - organised students' strike - Took part in Individual Satyagraha in 1940 - arrested and sentenced to 2 months under Defence of India rules - Kept in central jail, Madras - Again kept in jail as detenu for 2 years - Founded Tirupur Kumaran Valibar Sangam - Address: Acharapakkam.

36. Doraiswami, J. : b. 1916 - Took part in Individual Satyagraha Movement 1941 - arrested and sentenced to 15 days under Defence of India Rules - Kept in Central jail, Madras - Address: 15, Yadhava Street, Thiruvallur.

37. Doraiswami, K.N. : b. 1910 - Took part in Civil Disobedience Movement, 1930 - arrested and sentenced to 6 months under Sec. 143 I.P.C. - Kept in Central jail, Madras.

38. Duraikannu - s. Muniswami: b. 21.6.1908 - Joined the movement in 1930 and took part in Individual Satyagraha, 1940 - arrested and sentenced to six months - Kept in Vellore and Tiruchirappalli jails - was Joint Secretary, Chittoor District Congress Committee (1937-38) was Chairman Board of Trustees of Thirutani Temples - Address: Periakalakattur.

39. Ellappan, P.S.: b. 21.12.1901 - Joined the movement in 1921 - Took part in Simon Commission boycoting, 1928 and Salt Satyagraha, 1930 courted imprisonment - Address: Sunampedu, *(via)* Madurantakam.

40. Ethira, E.V.: Took part in August Movement, 1942 - was one among the arrested in the case of damaging / the fitting of electric train on 20.8.42, sentenced to one month.

41. Ethirajan - s. Doraiswami Naidu: Took part in August Movement 1942 - Convicted to three months - Address: Pavazhanthangal.

42. Ethirajalu - s. Narayanasami Naidu: b. 1920 - Joined the movement in 1939 - Took part in Quit India Movement, 1942 - arrested and sentenced to 6 months under Sec. 7(1) of Criminal Law Amendment Act, 1942 - Kept in Vellore and Alipuram jails - Address: 19, Vilakkadi Koil Thoppu Street, Little Kancheepuram.

43. Gangadharan, A.R.s. Loganatha Mudaliar: b. 1909 c. Intermediate - Joined the movement in 1931 - Took part in Foreign cloth boycotting, Toddy shop picketing, 1931 - arrested and sentenced to six months under Sec. 143 and 188 I.P.C. - Kept in Madras and Alipuram jails - Died in 1951 - Address: Nellukara Street.

44. Gopal Rao, D.: Took part in August Movement, 1942 - one of the arrested in connection with damaging the fittings of electric train in August, 1942 - Fined Rs.30/- under Defence of India Rules.

45. Govindaraj, N.A.: b;. 1909 - Joined the movement in 1940 - participated in Individual Satyagraha 1941 and courted imprisonment under Defence of India Rules - Kept in Central jail, Madras for 3 months - was Secretary Kothawalchavadi Congress Committee - Address: 3, Yadhava Street, Old Poonamalle, Sriperumbudur taluk.

46. Govindaraj s. Krishnasamy Mudaliar: b. 8.3.1913-e S.S.L.C. - Joined the movement in 1942 - arrested and detained under Defence of India Rules in Vellore and Thanjavur, jails for 14 months - was councillor Conjeevaram Municipality - Address: 12, Ennaikkara Street, Kancheepuram.

47. Govindarajulu,T.V.: b. 1911. Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to 1 month under Defence of India Rules - Kept in Central jail, Madras - Address: Tiruvallur.

48. Govindasami-s. Chellappa Naidu: b. 1907 - Joined the movement in 1935 and took part in August Movement, 1942 - Address: M.K.N. Road, Alandur.

49. Govindasami, L: b. 1910 - Joined the movement in 1930 - Took part in Civil Disobedience Movement in 1932 and Individual Satyagraha in 1941 - arrested and sentenced to 6 months in 1932 under Criminal Las Amendment Act - Kept in Central jail, Madras - was Secretary and President in many associations in North Madras - Address: 22, Kailkilam chavadi, T.B.Sanatorium, Tambaram.

50. Gramani, Krishnappa: Took part in August Movement 1942 - one among the accused in Saidapet fuel depot looting case - Sentenced to three months - Address: Saidapet.

51. Iyengar, Gopalasami - s Doraisami Iyengar: b. 2.1.1990 -e. B.A. - Joined the movement in 1921 - Took part in Salt Satyagraha, 1930 - arrested and sentenced to 4 months under Sec.143 I.P.C. - Kept in Alipuram jail - Died on 27.1.1966 - Address: Pillaipakkam-Sriperumbudur P.O.

52. Iyengar, A.T. Krishnaswamy: Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to 6 weeks - Kept in Central jail, Madras - Address: Damal Village, Kancheepuram taluk.

53. Iyengar, Rangasamy - s. Thiruvenkatachari: b.9.11.1895-e. S.S.L.C. -Joined the movement in 1919 - Took part in Foreign cloth boycott and Individual Satyagraha, 1941 - Courted imprisonment and kept in Vellore jail for 6 weeks - Address: 36, South Car street, Little Kancheepuram.

54. Iyengar, Santana - s. D. Srinivasachariar : Journalist - Took part in Quit India Movement, 1942-arrested and sentenced to one month and 10 days under Defence of India Rules - Kept in Vellore Central jail - Address: Malayankulam, Kancheepuram,

55. Iyengar, M.T. Vedanta-Srinivasachari: Joined the movement in 1930 - Took part in Civil Disobedience Movement, 1930-32 and Quit India Movement, 1942 - arrested and sentenced to 6 months under section 188 I.P.C. in 1930 and to 7 months under Criminal Law Amendment Act during 1932 and again to 7½ months in 1942 - Kept in Vellore and Thanjavur Special jails - Died - Address: Kancheepuram.

56. Iyer, Narayanasami-s. Venkata Iyer: b. 1910- Took part in Salt Satyagraha Movement, 1930 - arrested and sentenced to 6 months under Sec143 I.P.C. - Kept in Vellore Central jail.

57. Iyer, Nataraja: s. Muthusami Iyer: b.4.6.1893-e.B.A.B.L.-Joined the movement and took part in Individual Satyagraha - 1941 and August Movement, 1942 - arrested and sentenced to three months in 1941 - In 1942 was arrested and kept as detenu in Vellore jail - was Secretary Chingleput Taluk Congress Committee - Died on 2.6.1943 in Vellore jail while he wad detenu - Address : 118, Mettu Street, Chengalpattu.

58. Iyer, Vaidyanatha - s Kothandarama Iyer : b. 1914 - Took part in Salt Satyagraha, 1930 - arrested and sentenced to six months under Sec. 143. I.P.C - Kept in Alipuram jail - Addres: Kancheepuram.

59. Iyer, Visweswara, T: Took part in August Movement 1942 - one of the accused for putting obstacles on the railway line in Madras. Fined Rs. 100/-

60. Jain, Amirathalala: b. 1916 - e. literate - Joined and took part in Quit India Movement, 1942-courted imprisonment and kept in Alipuram jail - Died in 1944 - Address: Kancheepuram.

61. Janaki Ammal, U.M-W. Aravamutha Iyengar: b. 25.9.1916 e. literate - Joined the movement in 1941 - Took part in Individual Satyagraha, 1941 - was arrested and sentenced - kept in State Jail for woman, Vellore for 1 1/2 months, was member, District Board Chingleput District - Address: 'Anantha Bhavan', Uthiramerur.

62. Janarthanam, G.E.: b.30.10.1912 e. literate-Took part in Individual Satyagraha, 1941,- and August Movement 1942 - arrested and sentenced to one month under Defence of India Rules - Kept in Madras Central jail - Address: 29, Nalvarpettai Pirathatchannai, Pattai st., Thirukkazhukunram.

63. Joseph - s. Bernad: b. 1911 - e. S.S.L.C. - Took part in Civil Disobedience Movement, 1932 - arrested and sentenced to 6 months under Press Emergency Act, 1932 - arrested again in 1934 and sentenced to 3 years under sec. 120(B) I.P.C. - Kept in Vollere, Tiruchirappali and Bellary jails - Died on 21.6.1966.

64. Kallattu: Took part in August Movement, 1942 - was one of the accused in Saidapet fuel depot looting case sentenced to three months - Address: Saidapet.

65. Kandaswamy: Took part in August Movement, 1942 - prosecuted for distribution of prejudicial leaflets - Address: 19, Narayanapalayam street, Kancheepuram.

66.Kandasamy. S. Mohanam: b. 1921 - Joined the movement in 1943 - Took part in Quit India Movement, 1943 - arrested and sentenced - Kept in Alipuram jail for 15 months under Defence of India Rules - was Assistant secretary, "Desiya Valibar Sangham" Kancheepuram - Address: 19-B, Narayanapaliya Street, Kancheepuram.

67. Kannan, G.K. s. Kuppusamy Chetty: 9.9.1920-Joined and took part in Individual Satyagraha, 1941 and Quit India Movement 1942 - arrested kept in Vellore, Cannanore and Thanjavur jails as detenu for about 2 years - Address: 72, Vilakkadi Koil Street, Kancheepuram.

68. Kannan, s.: b. 1921 - participated in Individual Satyagraha, 1941 and Quit India Movement, 1942 - courted imprisonment Kept in Vellore and Alipuram jails for six months - Left the congress in 1945 and Joined the communist party - Address: Thayarkulam street, Kancheepuram.

69. Kannapandithan, s.: b. 1919 - Took part in Individual Satyagraha, 1941 - arrested and sentenced to one month under Defence on India Rules - Kept in Central jail, Madras - Address: Kottalkollai Street, Kancheepuram.

70. Kanniah -s. Durisami Naidu: b. 1913 - Joined and took part in Quit India Movement , 1942 - arrested and sentenced - Address: Pavazhanthangal St. Thomas Mount, P.O., Saidapet taluk.

71. Kanniappan, M.: 5. 1911 - Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to one month under Defence of India Rules - Kept in Central jail, Madras - Address: Kancheepuram.

72. Kanniappan, N.V.: Took part in August Novement 1942 - arrested and sentenced to six months - Address: Thiruvothiyur.

73. Kanniappan - s. Vedagiri: b. 13.1.1919 - Took part in August Movement 1942 - arrested and sentenced to six months in 1942 under Defence of India Rules - Kept in Alipuram Jail - was Treasurer, Saidapet Taluk Congress Committee, Secretary, Thiruvothiyur Village Congress Committee - Lost his right eye at Alipuram jail while he was lathi charged - Address: Kuppam, Thiruvothiyur.

74. Kothandaraman -s. Munusami Chetty: b. 1908 - Took part in Salt Satyagraha, 1930, Quit India movement 1942 - was vice President, Saidapet Taluk Congress Committee - Address: 60, Milagu Pillai Street, Pallavaram Contonment.

75. Krishnan. M.: b. 10.4.1918 - Joined the movement in 1941 - Took part in Anti-war Movement, 1941 - courted imprisonment and kept in Madras jail for 3 months - Address: Nellikuppam P.O.

76. Krishnamurthi, P.S.: b.16.1.1912 - e. S.S.L.C. - Took Part in Individual Satyagraha, 1941 - underground worker in 1942 - Address: 1, Eswaran Koil Street, Alandur.

77. Krishnamurthy, M.V: Took part in August movement, 1942 - one of the accused for putting obstacles on the railway line in Madras-Fined Rs. 100/-

78. Krishnasamy, T.K. - s. Kandasamy Mudaliar: b. 1914 - Took part in Civil Disobedience Movement, 1932, arrested and sentenced to seven months under sec. 436 I.P.C. - Kept in Alipuram jail - Address: Tenneri, Kancheepuram.

79. Krishnaswamy. V.: b. 16.2.1910 - Took part in Individual satyagraha courted imprisonment in 1941 and kept in Chingleput Jail for 12 months - Address: The Samulipettai - Thirukkazhukunram Post.

80. Krishnasami Battachari S. Ramasamy: b. 190 - Took part in Quit India Movement, 1942 - arrested and kept as detenu in Vellore and Thanjavur jails for 19 months under Defence of India Rules - Address: Arasar Koil.

81. Krishniah, D.: b. 24.6.1894 - e. S.S.L.C.-Joined the movement in 1921 - Took part in Toddy shop picketing, 1921 and Salt Satyagraha, 1930 - Address: Vellakulam, Ponneri P.O.

82. Kuppusami, M.: b. 1909 - Took part in Individual Satyagraha, 1941 - arrested and sentenced to three months under Defence of India Rules - Kept in Central Jail, Vellore -Address: Peria Street, Tiruttani.

83. Kuppusamy - s. Sivasankara Naicker: b. 1920 - Took part in Quit India Movement, 1942 - arrested and sentenced to three months under Defence of India Rules - Kept in Alipuram jail - Address: Kancheepuram.

84. Kuppusamy, R.S.: b. 15.8.1923 - Took part in Individual Satyagraha, 1941 and Quit India Movement 1942, courted imprisonment in 1942 - Address: 60-B Senkazhaneerrodai Street, Big Kancheepuram.

85. Kuppusamy, G.E. - s. Perumal Chetty : b. 1919 - e. literate - Joined the movement in 1939 - Took part in Quit India Movement, 1942 - arrested and sentenced to 3 months - Kept in Alipuram jail - Died in 1947 - Address: 51, Bharapettai Street, Kancheepuram.

86. Madan Mohan Raj - s. Javetroj: b. 1918 - Took part in Quit India Movement, 1942 - arrested and sentenced to 13 months under Defence of India Rules Kept in Vellore Central jail - Address: Tiruvallur.

87. Mallikarjunam, B.V.: b. 1907 - Joined the movement in 1927 and took part in Salt Satyagraha, 1930 and Individual Satyagraha, 1941-arrested and sentenced to six weeks and Kept in Madras jail - was Joint Secretary, Tiruvallur Taluk Congress Committee - Address: Perumalpatti P.O., Tiruvallur taluk.

88. Manis - Nesa Mani: b. 1897 - Took part in Quit India Movement, 1942, arrested and sentenced to one year under Defence of India Rules - Kept in Alipuram jail - Address: Thiurvothiyur.

89. Manickam - s. Natesa Mudaliar: b. 1921 - Took part in August Movement 1942 - arrested and sentenced to three months under Defence of India Rules - Kept in Alipuram jail - Address: Thiruvothiyur.

90. Mudaliar, Annamalai - s.Jagannatha Mudali: b. 1906 - Took part in Civil Disobedience Movement, 1932 arrested and sentenced to one year under Sec. 17(1) of the Criminal Law Amendment Act, 1932 - Kept in Vellore Central jail - Address: Big Kancheepuram.

91. Mudaliar, Chinnasami - s. Venkataraja Mudaliar: b. 1897 - Took part in Civil Disobedience Movement, 1931 - arrested and sentenced to six months under Sec. 143 and 188 I.P.C in 1931 - Kept in Alipuram jail - Address: Kancheepuram.

92. Mudaliar, Ekambara: Took part in August Movement, 1942 - one of the accused in Saidapet fuel depot looting case - sentenced to three months - Address: Saidapet.

93. Mudaliar, G.Krishnasamy: 1916 - Took part in Individual Satyagraha 1941 - arrested and sentenced to three months under Defence of India Rules - Kept in Central jail, Madras - Address: 10-B, Singaperumal Koil, South Mada St., Kancheepuram.

94. Mudaliar, Kuppusami: Took part in August Movement, 1942 - one among the accused in the Saidapet fuel depot looting case - Address: Saidapet.

95. Mudaliar, Kuppuswami - s. Chellappa Mudali: b. 1916 - Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to three months under Defence of India Rules - Kept in Vellore Central jail - Address: Kadambattur.

96. Mudaliar. T. Kuppusami - s. Kumarasami Mudaliar: Joined the movement in 1941 - Took part in Individual Satyagraha, 1941 - Took part in Individual Satyagraha, 1941 - Courted imprisonment and kept in Central jail, Madras for one month - Address: 30-A Putheri Street, Kancheepuram.

97. Mudaliar, Kuppusamy - s. Raju Mudaliar: b. 1910 - e. Intermediate - Joined the movement in 1942 - Took part in August Movement, 1942 - Courted imprisonment under Defence of India Rules - Kept in Vellore jail for two months - Address: Melmanappakkam, Palur Post.

98. Mudaliar, K. Manickavasaga: b. 5.10.1918 - Joined the movement in 1930 - Took part in Foreign cloth and toddy shop picketing, 1931 arrested, sentenced and kept in Vellore, Thanjavur jails for three months - Address : Nellikuppam *via.* Thirupporur.

99. Mudaliar, Munusami. s.Munusami Mudaliar: b.13.12.1907 - e. literate - Took part in Simon Commission boycott, 1928 - Salt Satyagraha, 1930, Toddy Shop Picketing, Foreing Cloth Boycott, 1931, and Quit India Movement, 1942 - arrested and sentenced to six months under Sec. 188 I.P.C. during 1931 and kept in Madras and Alipuam jail - Address : 104A, Sangeetha Vidwan Naina Pillai Street, Kancheepuram.

100. Mudaliar, Murugesa -s.Rathina Mudaliar: Took part in August Movement, 1942 - one of the accused in Saidapet fuel depot looting case - Address: Saidapet.

101. Mudaliar, C.N. Muthuranga: b.1888 e. Graduate - Took part in the struggle for independence since 1917. Took part in the Home Rule agitation of late Dr. Annie Besant - Took active part in Non Co-operation Movement was the President of the Chingleput District Congress Committee for several years - was the chairman of the Reception committee of the Tamil Nadu Provincial conference held at Conjeevaram in 1925 - was chairman of Reception Committee, Indian National Congress Session 1927 - was for some years the vice - President of the Tamil Nadu Congress Committee and was elected President there of in 1929,1937 and 1938 - Took part in 1932 Satyagraha Movement and was arrested for leading a procession in Madras on January 26, 1932 - was beaten and sentenced to one year imprisonment and to pay a fine of Rs.100/-. Also took part in Individual Satyagraha Movement in 1941 - was arrested and sentenced to three months and kept in Madras and Alipuram jails - During 1942 August Movement he was arrested and kept in Vellore, Madras and Amroati jails as Detenu and released in June 1943 - Was for sometime President of the Madras Mahajana Sabha was elected to Central Legislature in 1934 - Was elected member of the Madras Legislative Council as a swarajist candidate and resigned. He was unanimously elected the President of the 39 Tamil Nadu Political conference held at Batlagundu on the 16 January, 1938 - Died on 5.2.1949.

102. Mudaliar, V.M. Narayanasamy *alias* Kannairam: b. 1916 - Joined in 1943 - Participated in Quit India Movement in 1943 - arrested and sentenced to three months kept in Alipuram jail - Died on 4.8.60 - Address: 19-B, Narayana Paliya Street, Kancheepuram.

103. Mudaliar, Natesa: Took part in August Movement, 1942, - one of the accused in the Saidapet fuel depot looting case - Address: Saidapet.

104. Mudaliar, A, Natesa -s. Amaranath: b. 1915 - e. literate - Joined the movement in 1941 - Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942 - Courted imprisonment and kept in Madras Central jail for one month in 1941 and in Alipuram jail for 14 1/2 months during 1942-44 - Address: 30, Velingai Pattarai Street, Kancheepuram.

105. Mudaliar, Palni: Took part in August Movement, 1942 - one of the accused in the Saidapet fuel depot looting case - Address: Saidapet.

106. Mudaliar, Rajarathina - s. Sivasami Mudaliar: b. 1894 - Joined the movement in 1919 - Took part in Foreign Cloth Boycotting - arrested and sentenced to six months in 1931 and was under detention in 1942 - kept in Vellore, Madras and Alipuram jails - Died in 1954 - Address: 29-A, Sangeetha Vidwan Naina Pillai Street.

107. Mudaliar, T. Raju: b. 1914 - Joined the movement in 1930 - Took part in Toddy part shop picketing, 1930, Individual Satyagraha, 1941 and Quit India Movement, 1942 - Address: 20 Mathanampalaya Street, Pillaiyar Palayam, Kancheepuram.

108. Mudaliar, P. Rathnavelu: b. 1896, Took part in Civil Disobedience Movement, 1931 - arrested and sentenced to six months under Sec. 143 and 188 I.P.C. Kept in central jail Madras: Address: Yennakara Street, Kancheepuram.

109. Mudaliar, Saminatha - s. Ponnusamy Mudaliar: b. 1905 - Joined the movement in 1930 - Took part in Quit India Movement, 1942 - arrested and sentenced to four months under Defence of India Rules - Kept in Alipuram jail - Address: Kancheepuram.

110. Mudaliar, Saravana- R: Took part in August Movement, 1942.

111. Mudaliar, Saravana- s Masilamani Mudaliar: b.1915 - Joined the movement in 1939 - Took part in Individual Satyagraha 1941 and Quit India Movement 1942 - arrested under the Defence of India Rules and sentenced to one month in 1941 and to four months in 1942 - Kept in Madras and Alipuram jails - Address: 2 B, Bangaru Esappa Nayakar Street, Kancheepuram.

112. Mudaliar, R. Subramania: b. 1906 - Joined and took part in Foreign Cloth boycotting, 1931 - arrested and sentenced to six months and kept in central jail, Madras - Address: 33, Sappani Pillaiyar Koil Street, Kancheepuram.

113. Mudaliar, Sundararaja .s. Murugappa Mudaliar: b. 1921 - Took part in 1942 August Movement - arrested and sentenced to one year under Defence of India Rules - Kept in Alipuram jail - Address: Karunguzhi, Madurantagam.

114. Mudaliar, N. Thiruvengada: b. 1912 - Took part in Civil Disobedience Movement, 1932 - arrested and sentenced to three days under Section 7(1) of Criminal Law Amendment Act- Kept in Central jail, Madras - Address: Thirukkazhukunram.

115. Mudaliar, s. Varadaraja: b. 1909 - Took part in Civil Disobedience Movement, 1931 - arrested and sentenced to six months under Sec. 143 and 188 I.P.C. Kept in central jail, Madras - Address: Kancheepuram.

116. Mudaliar, Viswanatha - s. Kuppusami Mudaliar: b. 1920 - Joined the movement in 1942 - Took part in August Movement, 1942 - arrested and sentenced to one year under Defence of India Rules - Kept in Alipuram Jail - Address: Karunguzhi Post, Madurantagam taluk.

117. Muniswamy, N.R.: b. 8.10.1924 - Joined the movement in 1942 - Took part in underground activities - Left the Congress in 1945 - Address: 15, Velakkoil Perumal Koil Street, Kancheepuram.

118. Munusamy: Took part in August Movement in 1942 one of the accused in Saidapet fuel depot looting case - sentenced to three months - Address: Saidapet.

119. Muruganna *alias* **Amarnath:** Took part in August Movement, 1942 - arrested in connection with the damaging the fittings of the electric train in Madras in August 1942 - fined Rs.50/-.

120. Murugesan, S.: b. 1907 - Took part in Salt Satyagraha Movement, 1930 arrested and sentenced to six months under Sec. 143 I.P.C. - Kept in Central jail Madras.

121. Nagalingam: s. Late Arumuga Mudaliar: Took part in the Individual Satyagragha, 1941 - sentenced and kept in Central jail Bellary / for 6 months.

122. Nagalingam, K.A.: Took part in Individual Satyagraha Movement and Quit India Movement 1940 - 1942 arrested and sentenced to 10 months in 1940 - and kept under detention in 1942 - Kept in Madras, Vellore, Cannanore and Tanjore jails.

123. Naicker, N. Angu, - s. Kanniappa Naicker: Took part in Civil Disobedience Movement, 1930 - arrested and sentenced to three months under Sec. 147 and 332 I.P.C.-Kept in Central jail, Madras - Address: Sholinganallur.

124. Naicker C.V.M. Annamalai, s. Munusami Naicker: b. 1917 - Took part in Civil Disobedience Movement, 1938 - arrested and sentenced to six months under Sec.7 (1) (a) of Criminal Law Amendment Act in 1938 - Kept in Madras and Alipuram jails.

125. Naicker Annamalai - s. Ponnappa Naicker: b. 1904. e. literate - Joined the movement in 1930 - Took part in Foreign Cloth Boycott,, Toddy shop picketing and Salt Satyagraha, 1930 - arrested and sentenced to six months under Sec.143 and 188 I.P.C. in 1931 - Kept in Madras and Vellore Central jails - Address: 36, Anandoli-Pandithar Street, Kancheepuram.

126. Naicker, Balasundara - s. Mahadeva Naicker: b. 1910 e. literate - Joined and took part in Civil Disobedience Movement in 1932 - arrested and sentenced to one year in 1932 - Kept in Vellore and Cannanore jails - Died in July 1966 - Address: Kamatchiamman Sannadhi Street, Big Kancheepuram.

127. Naicker, Duraisami - s. Thesappa Naicker: Took part in Civil Disobedience Movement, 1930 - arrested - and sentenced to three months under Sec. 147 and 332 I.P.C. - Kept in Central jail, Madras - Address: Sholinganallur.

128. Naicker, Govindaraja - s. Kanniappa Naicker: b. 1898 e. literate - Joined the movement in 1919 - Took part in Salt Satyagraha, 1930 and Quit India Movement, 1942 - Courted imprisonment and kept in Alipuram jail for eight months - Died in 1961 - Address: Sholinganallur.

129. Naicker, P. Irusappa: b. 1902 - Took part in Salt Satyagraha Movement 1930 - arrested and sentenced to three months - Kept in Central jail, Madras - Address: Sholinganallur.

130. Naicker, L. Kandasami: b. 1899 - Took part in Civil Disobedience Movement, 1931 - arrested and sentenced to six months under Sec. 143 and 188 I.P.C.- Kept in central jail, Madras - Address: Aladipullar Koil Street, Kancheepuram.

131. Naicker, Kosalarama - s. Thulukkana Naicker: Took part in Civil Disobedience Movement, 1930 - arrested and sentenced to three months under Sec. 147 and 32 I.P.C.- Kept in Central jail, Madras - Address: Sholiganallur.

132. Naicker, Kothanda: Took part in August Movement in 1942 - one of the accused in Saidapet fuel depot looting case - sentenced to three months - Address: Saidapet.

133. Naicker Krishnasamy - s. Jeevaratna Naicker: b;. 11.12.1911 - Joined the movement in 1932 - Took part in Civil Disobedience Movement, 1932 - courted imprisonment - Address: 1/62, Mettu Street, Senner- kuppam, Poonamalle.

134. Naicker, Kullappa - s. Venkatachala Naicker: b. 1896 - Joined the movement in 1930 - Took part in Salt Satyagraha, 1930 - arrested and sentenced to three months under Sec. 147 and 332 I.P.C. - Kept in Madras jail - Address: Sholiganallur Post, *(via)* Adyar.

135. Naicker, Mahadeva - s. Balasundara Naicker: b. 15.2. 1910 - e. literate - Joined the movement in 1930. Took part in Foreign Cloth boycotting and Toddy shop picketing, 1931 - arrested and sentenced to one year - Kept in Vellore jail - Address: Keezhambi Village, Krishnapuram Post.

136. Naicker, M. Munuswamy: b. 1908 - Took part in Cvil Disobedience Movement, 1932 - arrested and sentenced to four months under Sec. 17(1) of Criminal Law Amendment Act - Kept in Central jail, Madras - Address: Virugambakkam, Saidapet.

137. Naicker, Murugesa: Took part in the August Movement in 1942. One of the accused in the Saidapet fuel depot looting case - Sentenced to three months - Address: Saidapet.

138. Naicker, Muthukannu . s. Ponnappa Naicker: b. 1901- Joined the movement in 1930 - Took part in Salt Satyagraha 1930 - arrested and sentenced to nine months under Sec. 147 and 332 I.P.C. - Kept in Vellore jail - Died in 1964.

139. Naicker, P.M. Nataraja: b. 1907 - Took part in Individual Satyagraha Movement, 1941 arrested and sentenced to 15 days under Defence of India Rules - Kept in Central jail, Madras - Address: Saidapet.

140. Naicker, Natesa -s. Munusamy Naicker: b. 1901 - Joined the movement in 1927 - Took part in Salt Satyagraha, 1930 and Civil Disobedience Movement, 1932 - arrested and sentenced to nine months under Sec. 147 and 332 I.P.C. IN 1930 - Kept in Vellore jail as detenu in 1942 - Address: 5 South Mada Street Lane, Thirukkazhikundram.

141. Naicker, Natesa - s. Murugappa Naicker: Took part in Civil Disobedience Movement,1930 - arrested and sentenced to 30 months under Sec. 147 and 332 I.P.C. Kept in central, jail, Madras - Address: Sholinganallur.

142. Naicker Raju - s. Munusami Naicker: b. 28.8.1904- e. literate - Joined the movement in 1930 - Took part in Salt Satyagraha 1930-arrested and sentenced to six months under Sec. 188 I.P.C. - Kept in Tiruchirappalli jail - Address : Enjampakkam village, Karai post, Conjeevaram taluk.

143. Naicker, Perumal: Took part in August Movement in 1942 - one among the accused in the Saidapet fuel depot looting case - Sentenced to three months - Address: Saidapet.

144. Naicker, N.R. Ramadoss - s. Raghavalu: Took part in Salt Satyagraha, 1930 - Sentenced to six months - Kept in Coimbatore and Tiruchirappalli jails - Address: Vitalapuram.

145. Naicker, Singara: Took part in August Movement in 1942 - one among the accused in the Saidapet fuel depot looting case - Address: Saidapet.

146. Naicker, Singara - s. Cinna Naicker: Took part in Civil Disobedience Movement in 1930 - arrested and sentenced to three months under Sec.147 and 332 I.P.C. - Kept in Central jail, Madras-Address: Sholinganallur.

147. Naicker, Srinivasalu - s Perumal Naicker: Took part in Civil Disobedience Movement, 1930 - arrested and sentenced to three months under Sec. 147 and 332 I.P.C.- Kept in Central jail, Madras - Address: Sholinganallur.

148. Naicker, N. Thiruvenkata: b. 1912 - Took part in Neil Statue Satyagraha, 1927, Salt Satyagraha, 1930. Civil Disobedience Movement, 1932, Individual Satyagaraha, 1941 and Quit India Movement, 1942 - Courted imprisonment and kept in Madras jail for six months in 1942 - Address: 25/26, Kappal Poli Chetty Street, Chengalpattu.

149. Naidu, Chinnasami - s. Perumal Naidu: b.20.8.1895 e. literate - Joined the movement in 1921 - Took part in Individual Satyagraha, 1941 and 1942 movement - Courted imprisonment and kept in Vellore jail for two months - Also fined Rs.100/- Refused to pay the fine and kept in prison for a further period of one month - Address: 124, Kizhhor Village , Nellikuppam, P.O.

150. Naidu, K. Domodara: b.; 9.10.1921 - e. S.S.L.C. Joined and took part in Individual Satyagraha, 1941and Quit India Movement, 1942 - Address: Gummidipoondi.

151. Naidu. N. Devarajulu: b. 1905 - e. literate - Joined the movement in 1923 - Took part in Individual Satyagraha, 1941 and August Movement, 1942 - Courted imprisonment- Kept in Central jail, Madras for one month during 1942 - arrested and detained in Vellore, Cannanore and Thanjavur jails for 1½ years - Died on 1.11.1955 - Address: 77-B Vilakkadi Koil Street, Kancheepuram.

152. Naidu, M. Ethirajulu - s. Ramakrishna Naidu: b. 1909. e. literate - Joined the movement in 1930 and took part in Neil Statue Satyagraha, 1927, Salt Satyagraha, 1930 Individual Satyagraha, 1941 and Quit India Movement, 1942 - arrested and sentenced to six months in 1932 and in 1940 - detained in jail for 2 years - Kept in Madras and Vellore jails - Died in 1949 - Address: Gummudipoondi.

153. Naidu, N. Govindasamy: b. 1900 -e. literate - Joined the movement in 1930 - Took part in Salt Satyagraha, 1930 - Address: 29, Agraharam Street, Periakuppam, Tiruvallur taluk.

154. Naidu, Janakiram - s. Raghavalu Naidu: b. 1910 - Took part in Foreign Cloth Boycott and Toddy shop picketing, 1932 - arrested and sentenced to six months under Sec. 143 and 188 I.P.C. - Kept in Vellore and Bellary Central jails - Address: Kancheepuram.

155. Naidu, A. Kuppusami - s. Appaya Naidu: b. 1899 -e. literate - Joined the movement in 1920 - Took part in August Movement, 1942 - arrested and kept as detenue for 1½ years in Vellore and Thanjavur jails was Municipal Vice-Chairman - was President, Town Congress Committee - was M.L.A. 1952-57 - Address: 9 Appavoo Mudali Street, Big Kancheepuram.

156. Naidu, Lakshmipathai -s. Mul sami Naidu: b. 1915 - Took part in Quit India Movement, 1942 - arrested and sentenced to six months under Defence of India Rules - Kept in Alipuram jail - Address: Nagalapuram, Tiruvallur taluk.

157. Naidu, Merambur Subraya - s. Kannia Naidu: b. 1873- Took part in Non Co-operation Movement 1921 - arrested and sentenced to one month under Sec.147 and 323 I.P.C. - Kept in Vellore Central jail - Address: Neevaloor, Kancheepuram.

158. Naidu, B.V. Narayanasami: b. 1895 - Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to 2 months under Defence of India Rules- Kept in Central jail, Vellore - Address Doravaranpet, Tiruttani,

159. Naidu, Obulu. S.Chenchu Naidu: b. 1905 - Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to six months and six weeks under Defence of India Rules - Kept in Vellore, Bellary and Alipuram jails - Address: Ponneri.

160. Nadiu - N.G. Parthasarathy: s. Govinda Naidu: b. 1920 - Took part in Quit India Movement, 1942 - arrested and sentenced to two months under Sec. 7(1) of the Criminal Law Amendment Act - Kept in Alipuram jail - Address: Kancheepuram.

161. Naidu, S. Perumal: b. 26.1.1919 - e. literate - Joined the Congress in 1942 - Took part in Quit India Movement, 1942 - arrested and sentenced to one year under Defence of India Rules-Kept in Alipuram Jail - Address: Nathamedu Village, Pakka, P.O.

162. Naidu, Raju-s. Ramajayam Naidu: b. 1897 - Joined the movement in 1930 and took part in Salt Satyagraha, 1930, Individual Satayagraha, 1941 and Quit India Movement, 1942- Address: 9 Dharmaraja Koil Street, Karunghuzhi, P.O., Madurantakam taluk.

163. Naidu T.D. Sanjeevi: Joined and took part in Quit India Movement 1942 - arrested and sentenced to four months - Kept in Alipuram jail.

164. Naidu, Subba.V. s. Sengama Naidu: b. 1900-e. literate - Joined the movement in 1920- Took part in Simon Commission boycotting, 1928 - Salt Satyagraha, 1930, Toddy shop picketing, 1930 - Address: Pethalakkattoor- village, Tiruttani taluk.

165. Naidu, K.S. Varadarajulu: Took part in Civil Disobedience Movement, 1933 - arrested and sentenced to six months - Kept in Tiruchirappalli jail.

166. Nainiappan - s. Kuppuswami Mudali: b.; 1921 - Took part in August Movement, 1942- arrested and sentenced to one year under Defence of India Rules - Kept in Alipuram jail - Address: Saidapet.

167. Nair, K. Sivasankaran *alias* **Gandhi Doss -s. Krishna Nair:** Took part in Salt Satyagraha, 1930 - arrested and sentenced - Kept in Tiruchirappalli and Alipuram Jails.

168. Namichand Prem Ranka: b. 1916 - Took part in Individual Satyagraha Movement, 1941- arrested and sentenced to three months under Defence of India Rules - Kept in Madras central jail - Address: Bazaar Street, Saidapet.

169. Nandu alias Ramasami: Took part in the August Movement in 1942 - one among the accused in the Saidapet fuel depot looting case - Address: Saidapet.

170. Narasimhachari,D.T.: Took part in the August Movement in 1942 - Convicted and sentenced to one year.

171. Narasimhalu, s. M. Angiah Chettiar: b. 22.8.1902 - Joined the movement in 1930 and took part in Toddy shop and cloth shop picketing and Salt Satyagraha, 1930 - arrested and sentenced to three months and kept in Vellore jail - Address: 15-B, Sukkalalpalayam, Govinda Chetty Street, Little Kancheepuram.

172. Narasimhan, K.C. s. Krishnasami: b. 1914 - Took part in August Movement, 1942 - arrested and sentenced to six months under Defence of India Rules - Kept in Alipuram jail - Address: Uthukadu.

173. Narasimhan, t. - s. Krishnamachari: b. 1920 - e. literate - Joined the movement and took part in Quit India Movement, 1942 - arrested and sentenced to one year - Kept in Alipuram jail - Address: Damal Village, Kancheepuram.

174. Narayana Pishorode, J.P.: b. 1908 - Took part in Civil Disobedience Movement, 1932-33 arrested and sentenced to 7½ months in the first instance and again to six months - Kept in Madras Central Jail.

175. Natesan -s Muthusami Naicker: b. 1924 - Took part in Quit India Movement, 1942 - arrested and sentenced to four months under Sec. 38 (5) of Defence of India Rules - Kept in Central Jail, Madras.

176. Nattar, N. Ramaswamy: b. 1914 - Took part in Individual Satyagraha Movement, 1941 - arrested and sentenced to one month under Defence of India Rules - Kept in Central jail, Madras - Address: Kancheepuram.

177. Pachaiyappan -s. Chinnaya Naicker: b. 16-7-1920. e. literate - Joined the movement in 1941- Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942-arrested and kept in Vellore and Thanjavur jails as detenu for 19 months -Died in 1963 - Address: East Rajah Street, Big Kancheepuram.

178. Palanivelu, T.: b. 27-8-1897-e. Intermediate - Gandhian Constructive worker - Joined the movement in worker - Joined the movement, 1937-Took part in Harijan work, Untouchability removal movement, 1937- Foreign Cloth Boycott in, Khader Movement, 1939 and Inter caste Marriages etc.- Address: 291, High Road, Chengalpattu.

179. Pandaram, Rangarama - s. M. Ardanarayana: b. 1908- Took part in Civil Disobedience Movement, 1932-arrested and sentenced to one year and six months under Sec.4 of Ordinance Act - Kept in Cannanore Central Jail - Address: Thirukalikundram.

180. Pandurangan, s.Krishnasamy Mudaliar: b-1902- Took part in Individual Satyagaraha Movement, 1941-arrested and sentenced to two years and three months under Defence of India Rules - Kept in Alipuram jail - later joined the Communist Party - Address : Chingleput District.

181. Parthasarathy-s. Sadagopa Chetty : b. 10-6-1910. e. literate-Took part in Individual Satyagraha, 1941 and August Movement, 1942 arrested and sentenced to one month under Defence of India Rules in 1941-Kept in Central jail, Madras-arrested and detained in Vellore jail and special jail Thanjavur for 16 months again in 1942 - joined the Communist party in 1944-Address: 23-B, Vilakkadi Koil Street, Kancheepuram.

182. Periakannu-s. Srinivasa Koundan : b. 1906-Took part in Salt Satyagraha Movement-arrested and sentenced to one month under Sec.74(a) of Act IV of 1889 in 1936 - Kept in Alipuram jail-Address: Marakanam, Madurantakam taluk.

183. Perumal, T.K.s. Irusappa Naicker : b. 1922-joined the Movement in 1939-Took part in 1942 movement-arrested and sentenced to one year under Defence of India Rules-Kept in Alipuram jail-Address: Thirumangalam, Sriperumbudur.

184. Perumal, s. Narasimhalu Naidu : Took part in August Movement in 1942-arrested and sentenced to one year and three months-Address: Pavazhanthangal, Saidapet.

185. Pillai,O.Chengan : b.20-10-1898-Joined the movement in 1930-Took part in Individual Satyagraha Movement, 1941 and courted imprisonment and Kept in Tiruchirappalli Central jail for two months-Died on 6.12.1961-worked for the Harijan Uplift-was M.L.A. two terms-first nominated member, Chingleput District Board-Address: Vallur Village, Ponneri taluk.

186. Pillai, Duraisami-s. Ponnu Pillai : b. 1908-Took part in Civil Disobedience Movement, 1932-arrested and sentenced to three months under Sec.454 I.P.C. Kept in Central jail, Madras-Address: Koyambedu.

187. Pillai, Jagannatha-s. Muniswami Pillai : b-1906-Joined and took part in Salt Satyagraha, 1930-courted imprisonment-Address: Annampattu, Thirunitraiyoor Post.

188. Pillai, P.C.V. Muthukumarasami-s. Vaidyanathan Pillai : b. 1901-e-literate.-Took part in Individual Satyagraha Movement, 1941-arrested and sentenced-Kept in Alipuram jail for 5½ months-was vice-President, Village Congress Committee-Address : Wallajahbad.

189. Pillai, M.N. Purushothama-s. Madurai Muthu Pillai : Joined the movement in 1936-Took part in Quit India Movement, 1942-Address:Kattankulathur.

190. Pillai, Ramakrishna-s. Kuppuswami Pillai : b. 1906-Took part in Salt Satyagraha Movement, 1930-arrested and sentenced to six months under Sec.143 I.P.C.-Kept in Vellore Central jail.

191. Pillai, Subramania-s. Gopal Pillai : Took part in the Civil Disobedience Movement in 1932-arrested under section 17(1) Criminal Law Amendment Act-sentenced to six months, Kept in Tiruchirappalli Jail.

192. Ponnusamy-s. Duraisami Chettiar : b. 10-7-1923-joined the movement in 1942-Took part in Quit India Movement in 1942-arrested and detained in Vellore, Alipuram and Thanjavur jails for 16½ months under Defence of India Rules - Address : Pinnapoondi village, Mathoor P.O., Acharapakkam, Madurantakam Taluk.

193. Poovelu,P. : e.literate-Joined and took part in Quit India Movement, 1942-Address:403, Barathu Street, Thiruvothiyur.

194. Purushothaman, N.M. : b.1916-e.literate-Joined the movement in 1933 - Took part in Civil Disobedience Movement-was severely lathicharged in 1938 - Address : Kattankulathur, P.O.

195. Radhakrishnan, G : b.1.4.1922-e. S.S.L.C. - Joined the movement in 1941-Took part in Individual Satyagraha, 1941-arrested and sentenced to one month under Defence of India Rules-Kept in Central jail, Madras-under ground worker in 1942-President, Village Congress Committee-Address: Vengal village, *(via)* Periapalayam.

196. Radhakrishnan, P.S: b-16.9.1911-e. S.S.L.C.-Joined the movement in 1939-Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942-was Secretary, Tiruvallur Satyagraha Committee-Address: 53, Perumal Chetty Street, Tiruvallur, P.O.

197. Raghavachariar, C: Took part in Individual Satyagraha, 1941-arrested and sentenced to four months and kept in Vellore Central jail - Died in 1964-Address: Damal post, Chinglepet District.

198. Raguraman Dr.-S. Ranganatha Iyer: b.1900-Took part in Foreign Cloth Boycott, Toddy shop picketing, 1932-arrested and sentenced to one year under Sec.4 of the Ordinance Act-Kept in Vellore Central jail-Address: Big Kancheepuram.

199. Rajagopalan, P.V.: b-26-3-1910-e.S.S.L.C.- Joined the movement in 1939-Took part in Individual Satyagraha, 1941 and courted imprisonment-Kept in central jail, Madras for two months-Address: 31, Aladipillaiyar Koil Street, Kancheepuram.

200. Rajamanickam : Joined the movement in 1921-Took part in Simon Commission Boycott, 1927 and Salt Satyagraha Movement, 1930-courted imprisonment-Address: Villipakkam, Sornamedu Post, Madurantakam Taluk.

201. *Rajamanickam, P.M.s.Perumal Sami Mudaliar : b.12.2.1911-Joined the movement in 1950 and took part in Foreign Cloth Boycott, Salt Satyagraha, Toddy shop picketing 1930 and August Movement, 1942-arrested in 1942 and kept in Vellore jail-Address:102, Kosa Street, Kancheepuram.

202. Rajarathnam s.Vajiravelu Mudaliyar: b.1905-Took part in Civil Disobedience Movement, 1933-arrested and sentenced to three months under Criminal Law Amendment Act-Kept in Madras and Tiruchirappalli Central jails-Address: Kancheepuram.

203. *Raju, C.P.: b.9-5-1924-e.B.A. - Joined the movement in 1940-Took part in Individual Satyagraha Movement, 1941-arrested and kept in Madurai jail for one month-Address:75, Chavadi Street, Shaikpettai, Kancheepuram.

204. Ramachandran, T.A.: e-literate - Joined the movement in 1928-Took part in Toddy shop picketing-arrested and sentenced under Defence of India Rules-Kept in Madras jail for one month-Address:Parandur, P.O., Kancheepuram.

205. Ramachandran, V: Took part in the August Movement in 1942-one among the arrested in the case of damaging the fittings of electric train on 20.8.1942-Fined Rs.50/-

206. Ramachandran, M.V: b.1919-Took part in Individual Satyagraha Movement, 1941-arrested and sentenced to one month under Defence of India Rules in 1941-Kept in Central jail, Madras-Address: Tiruvallur.

207. *Ramanujam, K: b.20-10-1903-Took part in Salt Satyagraha 1930-courted imprisonment and kept in Vellore and Bellary jails for six months-Address: Swatantra Nilayam, Ondikuppam, Tiruvallur taluk.

208. Ramanujam, K: b-1910-Took part in Salt Satyagraha Movement, 1930-arrested and sentenced to six months under Sec.151 I.P.C.-Kept in Central jail, Madras-Address: Madurantagam.

209. Rangasami, M.T. *alias* **Ranganna-s. Srinivachari :** b.1912-e.literate-Joined the movement in 1932-participated in 1932 Satyagraha Movement-arrested and sentenced to seven months and kept in Salem and Vellore Central jails-arrested and kept in Vellore jail as detenu in 1940-Address: Malayankulam village, Paloor, P.O., *(via)* Walajabad.

210. Rao, Annaji: b.1907-Took part in Individual Satyagraha-arrested and sentenced to three months and fined Rs.15/- or two weeks under Defence of India Rules, 1941-Kept in Central jail, Madras-Address:1, Car Street, Saidapet.

211. Rao, Krishna,s.Ranganatha Rao, Advocate: b.1903-Took part in Individual Satyagraha, 1941-arrested and sentenced to seven months under Defence of India. Rules-Kept in Alipuram and Vellore jails-Died-Address:Chengalpattu.

212. Rao, V.Raghunatha: b. 1913 - Took part in Foreign cloth and Toddy shop picketing, 1932-arrested and sentenced to 7½ months under Sec.17(1) of Criminal Law Amendment Act-Kept in Central jail, Madras-Address: Kancheepuram.

213. Rao, Ramachandra : Took part in August Movement in 1942-one of the accused for putting obstacles on the railway line in Madras-Fined Rs.100/- Chengalpattu.

214. Rao, Subba, B: Took part in August Movement, 1942-one of the accused for putting obstacles on the railway line in Madras-Fined Rs.100/-

215. Reddiar, Govinda-s.Kandasamy Reddy: b.1906.e. literate-Jeep Driver-Joined the movement in 1930. Took part in Salt Satyagraha, 1930, Foreign cloth boycott, Toddy shop picketing, 1932,-courted imprisonment and kept in Central jail, Madras and Bellary jail for one year in 1930-31-was Secretary, Alandur Congress Committee for six years - Address:1, North Street, Madavarpuram, Alandur.

216. Reddiar, Kandasamy, s.Subba Reddy: Took part in the August Movement in 1942-Sentenced to three months.

217. Reddiar, K.V. Lakshmipathi-s.R. Venkatasamy Reddiar: b. 11.1.1943,e.literate-Joined the movement in 1935-Took part in Individual Satyagraha-arrested and kept as detenu in Vellore, Cannanore and Thanjavur jails for 15½ months-Address:Parukkal Post, Acharapakkam, Mathurantagam taluk.

218. *Reddiar, A.K. Ramakrishna: b.20.6.1902-e. S.S.L.C.-Joined the movement in 1928-Took part in Individual Satyagraha, 1941-arrested, sentenced and kept in Alipuram jail-Address: Kaliampoondi.

219. Reddiar, Venugopala-s.Chouchu Reddy: b.1911-Took part in Individual Satyagraha, 1941-arrested and sentenced to six months under Defence of India Rules in 1941 and kept in Bellary and Alipuram jails-arrested again in 1942 and kept as detenue in Vellore and Thanjavur special jails for 26 months-Was President of the Chingleput District Congress Committee-Address: Minjur, Ponneri.

220. Sahib, K.M. Basha: b.1914-Took part in Individual Satyagraha in 1941-arrested and sentenced to one month under Defence of India Rules-Kept in Central jail,Madras-Address:Kancheepuram.

221. Sahib, Maulana Abdul Kader s.Sheik Packamiam Sahib: b. 1875-Took part in Salt Satyagraha, 1930 and Civil Disobedience Movement, 1932-arrested and sentenced to six months under Sec.17(1) of Criminal Law Amendment Act and to one year under sec.177 I.P.C. read with 74(c) of Salt Act in 1930-32-Kept in Madras and Alipuram jails.

222. Sahib, Syed Tassuddin, s.Jalaludin Sahib: b.1890-e.literate - Joined the movement in 1941-Took part in Individual Satyagraha, 1941 and August Movement, 1942 arrested and sentenced to one month in 1941-again arrested in 1942 and detained in Vellore, Madras and Thanjavur jails for two years and two months under Defence of India Rules-Address:77, Battai Street, Karunguzhi, Mathuranthagam taluk.

223. Sailam Paul, J.-s.Joseph: Joined the movement in 1941-Took part in Individual Satyagraha Movement arrested and sentenced to two years-Kept in Alipuram and Bellary jails-Address:21, Arumugapa, Walajabad.

224. Sambandan, C.P. : Joined the movement in 1930-Took part in Toddy shop picketing, Foreign cloth boycotting, 1931, Individual Satyagraha, 1941 and Quit India Movement, 1942-Address:54, Sengazhuneer Odai Street, Kancheepuram.

225. Sarma, Krishnasamy : -e.Matriculation - Joined the movement in 1921-Took part in Non Co-operation Movement, 1921-22-D.C.C. Secretary in Pre-Gandhian days and early N.C. days-Fine speaker-Died-Address: Anaikatti Street, Little Kancheepuram.

226. Sarma, M. Munirathina : - e.literate: Joined the movement in 1921-Took part in Non Co-operation Movement, 1921 and Individual Satyagraha Movement, 1941-arrested under Defence of India Rules and sentenced to three months in 1941-Kept in Vellore Central jail-Died on 19.8.64-Address:43, Dandapani Nadar Street, Ponneri taluk.

227. Sarma, Nagaraja-s.Sethurama Sarma: b.1911.e.literate-Joined the movement in 1930 and took part in Salt Satyagraha, 1930, Civil Disobedience Movement, 1932 and 1942 movement-arrested and sentenced to 7½ months in 1932 under Sec.17(1) Criminal Law Amendment Act and to one year in 1942-kept in Bellary, Cuddalore and Alipuram jails-detained in Vellore and Thanjavur jails for 16 months-Was member, Provincial Congress Committee and Executive Member of the Chingleput District Congress Committee-Address: Subba Reddipalayam Post, Ponneri taluk.

228. Sarma, M. Venkatakrishna-s.M. Kuppaya: b.14.10.1896 e.literate-joined the movement in 1927. Took part in Individual Satyagraha, 1941, Quit India Movement, 1942-arrested and sentenced three months in 1941 and to 15 months in 1942 under Defence of India Rules-Kept in Vellore and Alipuram jails-Died in September, 1963-Address: Subbareddipalayam, Vallur, P.O., Ponneri taluk.

229. *Seenivasan, U.K.: b.1917-joined and took part in Individual Satyagraha, 1941-courted imprisonment-Address:24, Kadappai Road, Chetty Street, Thiruvallur Post.

230. Seethapathy, T: Took part in the August Movement, 1942-one among the arrested in connection with the damaging the fittings of electric train in August, 1942-Fined Rs.30/- under Defence of India Rules.

231. Sethumathavan, K.V.: b.25-8-1922-Joined the movement in 1941-Took part in Individual Satyagraha-Courted imprisonment and kept in Madras jail for one month-Address: Pulivay, Puthuli Post, Kancheepuram.

232. Sivagnana Prakasam-s. V.Rathinavelu Mudaliar: b.1906-Took part in Quit India Movement, 1942-arrested and sentenced to one year during - 1942 and four months during 1943-44 under Defence of India Rules-Kept in Alipuram jail-Address: Thiruvothiyur.

233. Sowcar, Abbey Raj-s.Gulab Chand Sowcar: b. 1917- Took part in Quit India Movement, 1943-arrested and sentenced to one month under Defence of India Rules-Kept in Alipuram jail-Address: Kancheepuram.

234. Sreenivasalu-s.Kallappa Naidu: b.1912-Took part in Civil Disobedience Movement, 1930-arrested and sentenced to six months under Sec.151 I.P.C.-Kept is Central jail, Cannanore - Address: Devadanam.

235.-Srinivasan: Took part in August Movement, 1942-prosecuted for pessession of prejudicial leaflets - Address:Sriperumbudur.

236.-Srinivasan, D.C.: Took part in August Movement, 1942-prosecuted but released by the court.

237. Srinivasan-s.Govindasamy Naicker: e. literate-Joined and took part in August Movement, 1942-arrested and sentenced to two years under Defence of India Rules-Kept in Beretal School, Palayamcottah-Address: Dharmaraja Koil Street, Ponvilainthakalathur,P.O.

238.-Srinivasan, S.: b.1916-Took part in Individual Satyagraha, 1941-arrested and sentenced to 15 days under Defence of India Rules-Kept in Central jail, Madras-Address:Tiruvallur Town.

239.-Srinivasan,P.S.s.Sundaram Iyer: b.1893-L.M.P.-joined the movement in 1924-Took part in Salt Satyagraha, 1930, Foreign Cloth Boycotting, 1932,-Individual Satyagraha, 1941 and Quit India Movement, 1942-arrested and sentenced as follows:-

1931-six months under Sec.143and 188 I.P.C. 1932-one year under Sec.4 of the Ordinance Act. 1940-one year under Defence of India Rules. 1942-44-Detenu from 13-9-42 to 30-11-44 under Defence of India Rules.

Kept in Madras, Vellore, Tiruchirappalli and Thanjavur jails-Was President, District Congress Committee, Town Congress Committee-Was Chairman, Conjeevaram Municipality-Was M.L.A., M.L.C., and Member Chengalpattu District Board-Died in 1962- Address: 46, Vilakkadi Koil Street, Little Kancheepuram.

240. Srinivasan, V.V.: Took part in August Movement, 1942-one among the accused for putting obstacles on the railway line in Madras-Fined Rs.100/-

241.- Subbier-S.Raghav Iyer: b. 1903-Public Prosecutor, Chegalpattu District.-Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942-arrested and sentenced to six months during 1941 and kept as detenu for 13 months during 1943-44 under Defence of India Rules-kept in Alipuram and Thanjavur Special jails-was M.L. - and Parliamentary Secretary.

242-*Subbukrishnan-s.Saravana Pillai: b. 1906-Joined the movement in 1931 and took part in Toddy shop picketing, 1932, Foreign goods boycotting and Quit India Movement, 1942-arrested and sentenced to three years-Address: Veeramangalam, P.O., Tiruttani taluk.

243*-Subramanya Raju, M.: b. 15-7-1910-e.S.S.L.C.- Joined and took part in Quit India Movement, 1942- courted imprisonment-Address: Car Street, Pallipet Post, Tiruttani taluk.

244.-Subramaniam-s.Ayyasami Naicker: Took part in Civil Disobedience Movement, 1930-arrested and sentenced to one year under Sec.145 I.P.C.-Kept in Madras, and Alipuram Jails-Address;Sanyasi Subedar Street, Alandur, St.Thomas Mount.

245-Subramaniam, C: Joined and took part in Salt Satyagraha in 1930-arrested and sentenced to one year-Kept in Tiruchirappalli, Madurai and Rajamundry jails-Address: Vannathurai, Thiruvothiyur.

246-Subramaniam, N: b-5-1-1920-e. literate-Took part in Quit India Movement, 1943 - Address:Nimbicherry Village, Chromepet Post.

247-Subramaniam,N: e.S.S.L.C. Joined the movement in 1936-Took part in Individual Satyagraha, 1941 and Quit India Movement, 1942-Died in 1956-Address: Erattai Pillaiyar Koil Street, Little Kancheepuram.

248-Subramaniam, C.S.-s.Govinda Gramani: b-1915-Took part in Quit India Movement, 1942-arrested and sentenced to one year under Defence of India Rules-Kept in Alipuram jail-Address: Thiruvothiyur.

249.-Sugavaneswaran-s.Ramachandra Iyer: b.15-9-1909 - e.S.S.L.C.-Joined the movement in 1930 - Took part in Salt Satyagraha, 1930 and Civil Disobedience Movement, 1931-32-arrested and sentenced to six months in 1930 under Sec.151 I.P.C. and to two years in 1932 under Section 145 I.P.C.-Kept in Madras Vellore, Tiruchirappalli and Alipuram jails-Worked for the uplift of Harijans- Address: Hindi Pandit, 2/15, Bazaar Street, Minjur, P.O.

250-Sundara Ramanjulu,N: b. 1895-Took part in Individual Satyagraha, 1941-arrested and sentenced to one month under Defence of India Rules-Kept in Central jail, Madras.-Address: Mathuranthakam.

251-*Sundiraraj-s. Murugappa Mudaliar: Joined and took part in August Movement, 1942-courted imprisonment and kept in Alipuram jail for one year-Died on 18-3-1957-Address: Bajanai Koil Street, Karunguzhi, P.O.

252-Thangavelu,G.: b- 16-11-1915-e.E.S.L.C.- Joined the movement in 1941 - Took part in Individual Satyagraha and Anti-war movement, 1941 -arrested and sentenced to one month in 1941-Kept in Central jail, Madras-Address: 17-B, Madanam Palaya Street, Pillaiyar Palayam, Kancheepuram.

253-Thiagarajan-s. Deivasi mani Mudaliar: b. 20-3-1920-e. literate-Joined the Movement in 1941 - Took part in Quit India Movement, 1942-arrested and sentenced to one year under Defence of India Rules - kept in Alipuram jail-again arrested and kept in Alipuram jail for three months in 1943 - 4- Left the Congress and joined the Communist party in 1946 - Address: 19, South Mada Street, Thiruvatiyur.

254-Thirunavukkarasu, M.S.Sami Vedachalam: b. 1907-Took part in Individual Satyagraha, 1941-arrested and sentenced to six months under Defence of India Rules Kept in Alipuram jail-Address: Sowrashtranagar, Saidapet.

255-Thiruvenkidam, S.Velmurugesa Naicker: e-literate-Joined the movement in 1927 - Took part in Individual Satyagraha and August Movements 1941-42-arrested and sentenced to two months in 1941-again arrested in 1942-Kept as detenu for 18 1/2 months in Vellore and Thanjavur jails-was Member of District Congress Committee and Taluk Congress Committee-Died in 1968-Address: Lakshmipuram, Minjur, P.O., Ponneri taluk.

256-Thulasinga Perumal -s. Lakshmana Mudaliar: b. 1921-Joined the movement in 1942-Took part in Quit India Movement, 1942-arrested and sentenced to 89 months under Defence of India Rules in 1942-Kept in Alipuram jail-Address:5, Mission School Street, Uttiramerur, P.O.

257-Udayar, Sambanda-s,Nainasami Udayar: e. literate-Joined the movement in 1928 and took part in Quit India Movement, 1942-arrested and sentenced to six months-Kept in Alipuram jail-Address: 16, Patters Street, Cantonment, Poonamallee.

258-Vadivelu: Took part in August Movement, 1942-one of the accused in Saidapet fuel depot looting case-sentenced to three months-Address: Saidapet.

259-Varadha Thathachariar,R: b.23-10-1908 -e.B.A. - Joined the movement in 1921 - Took part in Non-Co-operation, 1921, Salt Satyagraha, 1930, and Quit India Movements 1942-was Trustee of Vishnu Temple, Canjeevaram-Address: 33, Sannathi Street, Little Kancheepuram.

260-Vodatri, K.C.: b.1911-Took part in Salt Satyagraha, 1930-arrested and sentenced to 6 months under Sec.143 I.P.C.-Kept in Central jail, Madras.

261-Velayuthan,S.O: e. literate-Joined the movement in 1924-Took part in Simen Commission boycotting, 1928-arrested and sentenced to 15 days and again to six months under Defence of India Rules-Kept in Madras and Alipuram jails-Address: Sunampedu Post, Madurantakam taluk.

262-Venkatachalam-s. Adhi Devar: b. 1912-Took part in Foreign Cloth Boycott and Toddy Shop Picketting 1932-arrested and sentenced to eight months under Sec. 108 of the Indian Railway Act, 1890 and Sec.18(1) of Indian Press Emergeney Act-Address:Tiruppalavannam, Ponneri.

263-Venkatachariar,T.A.: Took part in the August Movement in 1942-Convicted and sentenced to two months-Address: Yadhathkari Street, Little Kanchipuram.

264-Venkatraman,R: b;.3-7-1907-Joined the movement in 1925-Took part in Salt Satyagraha 1930 -Died under ground work-Was Secretary, Indian Independence League, Malacca-Address: 42, Vazhykulatha Street, Srivilliputhur.

265-Venkatarayar: e.Matriculation-Joined the movement in 1920-Took part in Non Co-operation Movement, 1921-22-Died-Address: East Mada Street, Little Kanchipuram.

266. Venkatesan,T.S.: Took part in the August Movement in 1942-one of the accused in connection with the damaging the fittings of the electric train in August, 1942-Fined Rs.50/-.

267.Venugopal-s.Periathambi Naicker: b.1919-e. literate-Joined the movement in 1942 and courted imprisonment under Defence of India Rules kept in Alipuram jail for six months-Address: Tirumangai Alwar Street, Sriperumbudur.

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* [Who's who of Freedom Fighters - Vol.I - Government of Tamil Nadu 1973- pp.30 (reproduction of the pages related to the district)]

Notes & References

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3. Quoted from Robert Bruce Foote's - *Indian Pre-historic and Proto- historic Antiquities,* 1916, Madras, by K.V.Raman, in his work, *op.cit.* p.2.
4. K.V. Raman, *op.cit.*
5. V.D. Krishnasamy says that South Indian Megalithic period is ascribable to the Iron Age (Ancient India, 1949, p. 42). Also S. Srinivasachari, *History of Madras,* 1939, Madras, p.XVIII (Introduction).
6. Excavations were conducted by the Archaeological survey of India
7. R. Sathianathaier, *Studies in the Ancient History of Tondaimandalam,* University of Madras, (1944), p.1.
8. *Ibid.,* p. 28
9. R. Gopalan - *History of the Pallavas of Kanchi* 1928, University of Madras, p.26.
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11. *Ibid.,* p.2
12. *Ibid.*
13. K.A Nilakanda Sastri, Ed. *Foreign Notices of South India,* University of Madras, 1939, p.102.
14. K.A. Nilakanda Sastri-*A History of South India - University of Madras* - IV, Edn. 1976, p.87.
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16. *Ibid,* p.10
17. *Ibid,* p.12
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21. K.A.Nilakanda Sastri, *The Cholas,* Unversity of Madras 1955, II End., p. 36
22. R. Sathianathaier, *op. cit.,* p.12
23. R. Gopalan, *op. cit.,* p.28
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28. M. Arunachalam, *The Kalabhras in the Pandiya country and their Impact on the Life and Letters there.* 1979, University of Madras, p.63.
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31. R. Gopalan, *op. cit.,* p.37
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33. Rajamanickam, *Op.cit.,* p. 51
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37. R.Gopalan, *op.cit.*, p. 79
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40. *ARE*, 211 of 1912 and K.V. Raman *Early History of the Madras Region* by p.52
41. Sastri K.A.N. *A History of South India, op.cit.*, p.150
42. R. Gopalan, *op.cit.*, p.89
43. K.V.Raman, *The Early History of the Madras Region*, Madras, 1957, p.238
44. K.A.N. Sastri, *A History of South India, op.cit.*, p. 150
45. R. Goplan, *op.cit.*, p. 97.
46. மன்னவர்க்கு கண்டு போய் வடபுலத்து வாதாபித்
தொன்னகரம் துகளாகத் துளை நெடுங்கைவரையுகைத்து
பன்மணியும் நிதிக்குவையும் பகட்டினமும் பரித்தொகையும்
இன்னை வெண்ணில கவர்த்தே இகலரசன் முன் கொணர்ந்தார்.

--- பெரியபுராணம்–சிறுதொண்டர்புராணம்
செய்யுள்.6.

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கலங்க ளிபங்கும் மல்லைக் கடன் மல்லைத்தலசயனம்
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CHAPTER - 3

PEOPLE

The characteristics of a district mostly depend on the character and culture of its people. Different people, in character and caste, contribute to the culture and development of the district. The major communities that contribute to the development of Chengalpattu-MGR district are the *Vanniar*, the *Kamma Naidus*, the *Reddis*, the *Vellalas*, the *Senguntha Mudaliars*, the *Rajus*, the *Muslims*, the *Brahmins*, the *Thattans*, the *Karumans*, the *Kammars*, the *Kalthachans*, the *Komuttis*, the *Beri chettis*, the *Vania chettis*, the *Gramanis*, the *Irulas*, the *Yanadis*, the *Adi Andhras*, the *Chakkilians*, the *Arunthathiyas* and the *Valluvans*. These communities are engaged in different occupations. They work as cultivators, agricultural labourers, weavers, artisans, traders, etc. /

The important communities engaged in cultivation are the *Vanniar*, *Vellala*, *Kamma*, *Reddi* and *Gavarai*. The first two communities are Tamil speaking, while the rest are Telugu speaking. *Vanniar* is a leading caste in all taluks except Tiruttani and Ponneri where *Kammas* dominate. *Vanniars* are also known as *Vanniakula Kshatrias* who also assume the title of *Naickers*. The *Kammas* who are popularly known as *Naidus*, and *Kapus* who are called *Reddis* were originally soldiers by profession but have now become cultivators. The Rajus who claim to be *Kshatriyas* are the descendants of the *Kammas*. This caste is found in large number in Chengalpattu and Tiruttani taluks. It is perhaps, during the Vijayanagar period, that these people might have migrated into Chengalpattu district.

The *Vellalas* - the two important branches of which are the *Tondaimandala Vellalas* and *Tuluva Vellalas*, are by general consent, held in high esteem. The former, who are leading landlords in places like Cheyyur, Chunampet, etc., are strict vegetarians. The *Tuluva Vellalas* are also otherwise known as Arcot Mudaliars. The Vellalas are not noted for their hard work on farms, but they cultivate through labourers. *Agamudaiyan* is another cultivating community found in Kancheepuram taluk.

The members of the scheduled caste particularly the paraiyas or Adi Dravidars form bulk of the labour force. The other members of scheduled caste who take up agricultural labour in the district are *Adi-Andhra*, *Chakkilians*, *Arunthathiyars* and *Valluvans*.

The other important occupation of the district is weaving, in which the *Saliyars*, the silk weavers, the *Kaikolans* or the *Senguntha Mudaliars*, the cotton weavers and the *Patnulkaras* alias *Saurashtras* are engaged. It is evident that the weavers had come to Kancheepuram during the period of Karikala Chola. Kancheepuram is treated as the place, where the community is predominant. In the days of the Nawabs of Carnatic, they were forced to flee from Kancheepuram to places like Thanjavur, Madurai and Tirunelveli,

The *Senguntha Mudaliars* who are predominantly found in the taluks of Kancheepuram, Tiruttani, Madurantakam and Saidapet, are devotees of Lord Muruga.

The *Kammalas* are the main artisan caste of this district. They are divided into occupational subdivisions according to whether they work in gold, brass, iron, wood or stone. The goldsmiths are called *Thattans*, the blacksmiths - Karumans, the carpenters Thatchans, the brass-smiths and the stone masons *Kalthatchans*. The last named, with the title of *Mudaliar* or *Naicker*, are noted for their skill even from the days of the Pallavas. They now work on stones collected from places like Mamandur, Palayaseevaram, etc. A number of *Kalthatchans* have moved to cities like Bombay, Calcutta, and Hyderabad, to work in temples and projects like the Tungabhadra.

Traders

Deviating from the established custom, nowadays a number of castes are engaged in trade. But the principal trading communities are the *Komutti*, or *Vysya, Beri chettis, Kamma Naidus* and *Muslims*. The *Vaniya chettis* trade in generally oil.

Other Communities

There are many other castes whose members are small in number, but are economically sound. The *Brahmins* who live in this district either own lands and do personal or tenancy cultivation, or work in offices or practise as lawyers in places like Chengalpattu, Tiruvallur, etc. The *Vaishnavite* sect among the *Brahmins*, predominates in Uttiramerur, Tiruvallur, Oragadam, Madurantakam, Sriperumpudur and Thirumazhisai. It is interesting to learn that there was a long standing dispute between the two sects of *Vaishnavites* of this district, especially in Kancheepuram, the *Vadagalai* and *Thengalai* (The former refers to the northern sect, while the latter refers to the southern sect). The bone of contention between these two sects was that the *Vadagalais* would not read sacred books or chant except in Sanskrit but the Thengalais although revere that language, use only their mother tongue. While the former believe in salvation being secured by good work, the latter assert that it could be got through grace. A number of disputes between these two groups came up before the courts of law.

Muslims, engaged in trading and mat weaving are found in considerable numbers in Sriperumpudur taluk. There are a good number of Christians converted from castes like *Reddis* and *Naidus* who are engaged in cultivation. A large number of people belonging to the fishermen community of *Pattanavans* living in kuppams on the sea coast, are found in the district. A caste called *Gramani*, corresponding to that of *Nadar* community of Tirunelveli district is found in this district. These people were originally toddy tappers but now engaged in different trades and other occupations. Each village in

this district has got barbers, washermen and potters. Apart from these, are a few other community people whose strength is insignificant. All these people account for the population of the district. The predominant communities in each taluk are given below[1] (This, of course, excludes the Scheduled Castes who are numerous in all the taluks, and communities like *Brahmins, Komutti chettis,* etc., who are small in number):-

Taluk	*Important communities*
Ponneri	Kamma Naidus and Reddis
Chengalpattu	Vannias, Vellalas, Senguntha Mudaliars, Rajus and Gavarais
Gummidipoondi	Reddiars, Kamma Naidus
Kancheepuram	Vanniar, Sengunthars, Saliars, Ahamudaiyars, Vellalas and Kammalans
Madurantakam, Cheyyur	Vannias, Reddiars, Sengunthars and Vellalas
Pallipattu, Tiruttani	Vannias, Reddiars, Kamma Naidus, Sengunthars, Rajus and Vellalas
Saidapet	Vannias, Vellalas and Senguntha mudaliars
Sriperumbudur	Naickers (Vannias), Muslims, Vellalas and Christians
Tiruvallur and Uthukottai	Vannias, Kamma Naidus and Reddiars
Uthiramerur	Vannias, Vellalar, Sengunthars and Kammalans

Area, population and density of population

According to the 1991 Census[2], the District has a total population of 4,653,593 persons of whom 2,374,693 are males and 2,278,900 are females. It has a rural population of 2,565,583 persons with a break up of 1,298,354 males and 1,267,229 females. The total urban population of the district is 2,088,010 comprising 1,076,339 males and 1,011,671 females. The taluk-wise distribution of population is given in the *Appendix - 1.*

Density of Population

The density of population of the district per sq. km shown by the 1991 census is 588 as against 428 for the State. The higher density of population is due to the fact that a large number of persons, either on profession or business in Madras city, owing to paucity of accommodation there, could find better and cheaper accommodation in the suburbs of the city, which fall within the Chengalpattu-MGR district limits. Chengalpattu and Kancheepuram too accommodate quite a large number of office goers for whose transport convenience, trains are operated to Madras from these two places, at very frequent intervals.

There is variation between rural and urban density while the figure for the former stands at 38.93, for the latter it is 34.95 per cent. Among the taluks, the highest density is found in Saidapet taluk which has 2592 people per square kilometre. The lowest density is in Uthukottai taluk which has the density of 285 people per sq. kilometre[3]. Density of population of each taluk is given in *Appendix - 2.*

The density of population, in urban areas is higher than that of the rural areas in all the taluks of the district. The urban density is most marked in Saidapet taluk, where 2592 persons reside per sq.km. The rural density is also higher than that of the state rural density (428 persons per sq. km). Sriperumpudur taluk comes second with a higher density of 749 persons per sq. km. Chengalpattu, Pallipattu, Tiruvallur, and Tiruttani are the other taluks with high density of population.

Sex Ratio

The sex ratio of the district is a very interesting aspect. In the district, it is 960 females for every 1000 males. The corresponding figure for the State is 961. The ratio of female is higher in rural areas than in urban areas, the figures being 18,213,637 in rural areas and 9,346,334 in urban areas. The sex ratio is above the district average in all the taluks except Saidapet and Sriperumbudur taluks. In all the taluks, the ratio of females in rural areas is higher than that of the urban areas. The table presented below, (drawn from the Census Reports) shows the sex ratio in the district. Since the beginning of the century, as inferred from the table, the male population is more than that of the female in the district[4]. The Talukwise sex ratio is presented in *Appendix - 3.*

Population in the district since 1901 to 1991*

Census Year	*Persons*	*Male*	*Females*
1901	1,337,945	673,668	664,277
1911	1,432,748	718,647	714,101
1921	1,506,515	758,471	748,044
1931	1,646,612	831,227	815,385

1941	1,811,230	919,382	891,848
1951	1,958,090	992,948	965,142
1961	2,196,412	1,120,519	1,075,812
1971	2,907,599	1,848,124	1,768,384
1981	3,616,508	1,848,124	1,768,384
1991	4,653,593	2,374,693	2,278,900

* Census of India 1901, 1911, 1921, 1931, 1941, 1951, 1961, 1971, 1981, 1991.

Growth of population

The growth of population and its variation over a period of 90 years as shown in the Census Report since 1901 is presented in the statement below:

Growth and variation of population in Chengalpattu-MGR District from 1901 to 1991[5]:

Year	*Persons*	*Decade Variation*	*Percentage*	*Males*	*Females*
1901	1337945	-	-	673668	664277
1911	1432748	94803	7.09	718647	714101
1921	1506515	73767	5.15	758471	748044
1931	1646612	140097	9.30	831227	815385
1941	1811230	164618	10.00	919382	891848
1951	1958090	146860	8.11	992948	965142
1961	2196412	238322	12.17	1120591	1075821
1971	297599	711187	32.38	1492978	1414629
1981	3616508	708909	29-26	1848124	1768384
1991	653593	1036585	28.68	2374698	2278900

It can be gauged from the table that the growth of population has not been uniform during the last several decades and there is a considerable increase in population. The population during the 90 years period has seen a growth of about 400 per cent. The growth of population during the first ten years was 7.09 per cent but it had gone down to 5.15 per cent during the next decade. After this, the subsequent decades have witnessed a constant growth except between 1941 and 1951 when the increase was only 8.11 per cent. But, the decade between 1961 and 1971 shows an alarming increase in the growth rate of population. The lower rate of increase during 1911 and 1921 is attributed mainly to the failure of monsoons and to the effects of the influenza and epidemic which conquered the Madras State in 1917. Though the early years of the decade (1911-1921) were favourable for cultivation, the years after 1971 were to a large extent unfavourable. The south - west monsoon failed and resulted in the reduction of cultivated areas.

Because of the falling of the cropped area, the yield was affected adversely. The death rate was also above average owing to cholera which was widely prevalent in the district. Due to this, there was a large scale migration from this district. This was the general condition throughout the state as revealed by the low percentage of population growth which was only 3.47 for the state during this decade, while during 1931-1941, the increase in population was ten per cent during 1941-1951 it was only 8.11 per cent. This was due to the adverse seasonal factors since 1947-48 brought about by continued failure of the north-east monsoon. Madurantakam taluk was the most affected by the adverse seasonal conditions. There was considerable migration from the taluks, particularly from Madurantakam to Madras City. In Madurantakam taluk, the tappers from a number of villages migrated to Madras city and other areas and some even to the then Mysore State seeking employment. From other parts of the district too there was migration which was somewhat normal.

Language

The main language of the people of the district is Tamil, spoken by a large number of people (84.43 per cent) as their mother-tongue[6]. Telugu is the second largely spoken language in the district. A section of the Muslim population speak Urdu. In the order of frequency, Tamil, Telugu, Urdu, Malayalam and Kannada are the languages spoken largely in the district. Tamil is spoken by 84.43 per cent; Telugu is spoken by 11.45 per cent; Urdu by 1.65 per cent, Malayalam by 1.17 percent and Kannada by 0.32 per cent of the population of the district. The population that speak other languages is 0.98 per cent.

Bilingualism

A number of people in the district speak more than one language as they have acquired working knowledge of language other than their mother-tongue. Nearly 13.1 per cent of the people speak a second language other than their mother-tongue.

The prevalence of bilingualism would provide an interesting study. Most of the mother-tongue groups enumerated in the district have adopted easily to various other languages in use in the area and have acquired working knowledge of them. Thus, as presented in the Census Reports, a large number of the people whose mother-tongue is either Telugu or Urdu or Malayalam or Kannada, speak Tamil as the subsidiary language. Similarly, people having Urdu as their mother-tongue speak other languages like Telugu or Malayalam, etc., as their subsidiary languages. There may even be multilingualism.

The use of subsidiary language is, quite often, due to force of circumstances and acquaintance. The people who speak Tamil, as mother-tongue, usually, do not acquire the knowledge of a subsidiary language. Exceptions are not, however, ruled out. The Telugus, Muslims and the

Malayalees, (being numerically small) acquire the working knowledge of Tamil quickly, as it is the main language of the region. Telugu, which is the second largely spoken language has been the subsidiary language of a fairly large number of people. Next to Telugu, English is spoken, irrespective of any mother-tongue, as a subsidiary language by a large number of persons, especially the educated.

Differences in dialects

Though Tamil is the mother-tongue of a majority of people of the state, the spoken language varies from district to district and even within the district from region to region. The colloquial usage in the spoken dialect of Tamil in the district has some peculiarities of their own. A special study was conducted to find out the linguistic peculiarities and folk-lore of the district, - the report of which is presented in the *Appendix*. It would throw some light on the differences in usage of words, and words peculiar to this district. The folklore presented is what the people of the district have in store for special occasions to exhibit their literary histrionics.

It may be found in the ordinary spoken language of the district, a fair mixture of Telugu words, owing to the contiguity of the district with Telugu speaking areas which border the district. In pronunciation too, there is corruption. The word 'திருவிழா' (Festival), for example, is pronounced as 'திருவிஷா' and 'பழம்' (Fruit) as 'பயம்'. Even within the taluks, there are differences in pronunciation as the accents of the people of Saidapet and Tiruvallur vary from those of Kancheepuram and Madurantakam, and those of Gummidipoondi and Ponneri from the rest of the taluks. Variations in spoken dialect from class to class and from strata to strata give rise to a division into dialects, *viz*, upper class dialect and lower class dialect[7].

Immigration

As per the 1951 Census, 55 persons for every 1000 persons were migrants to this district. As enumerated in the 1961 Census, 6.84 lakh out of a total population of 21.9 lakh were migrants. The migrants during 1961-1971, and during 1971-1981 were 32.51 per cent. The number of migrants to the district is most marked and relatively high. The tracts of migrants extend to Burma, Ceylon, Singapore and Malaysia.

A large number of immigrants are from Andhra Pradesh, Kerala and Karnataka. While the immigrants from Andhra Pradesh generally live in the rural parts of the district, the other immigrants live in the urban tracts. In the sex-wise division of immigrants, male population exceeds the female population. Among the persons born in other districts and enumerated in Chengalpattu-MGR district, males and females constitute 42 per cent and 58 per cent respectively. Among the immigrants from other states, females out number males. There are more females than males even among the immigrants from the chengalpattu MGR district to other districts.

Religion and caste

The majority of the population professes Hinduism. The other religions that exist here are Christianity, Islam and to a very small extent Buddhism and Jainism. The Hindus constitute the major population of the district and are found numerically high in all the taluks, while the bulk of the remaining people are Christians and Muslims. The latter are numerous in Wallajabad and Kancheepuram. In Ponneri, Uthukottai, Saidapet and Chengalpattu taluks also are found Muslim population[8]. Though the concentration of Christians is more in St.Thomas Mount, Tambaram and Kancheepuram, they are spread over the entire district, but sparsely. A few Jains are also found in and around Kancheepuram.

The Hindus constitute about 92.17 per cent of the total population, while the Christians and Muslims constitute 4.54 and 3.09 per cent respectively and others constitute 0.20 per cent.

General Structure, Religious Beliefs, Manners and Customs

Generally, there is no marked difference in the characteristics of the people, their religious beliefs, customs and manners from the rest of the people of the state. However, there may exist marginal differences which are discussed in the succeeding paragraphs.

The Hindus

The Hindus, who form the majority of the population, worship, in addition to Siva or Vishnu, numerous local deities of their choice. Hinduism has produced many philosophers and seers, who, in addition to propagating the Hindu philosophy, propounded different schools of thought. One such philosopher is Sri Sankaracharya, who, in the beginning of the 9th* Century, advocated the *Advaita* philosophy. He is said to have sojourned at Kancheepuram, where he worked many miracles. He was the founder of the *Smarta Sect.*

Sri Sankara's philosophy inspired a new religious force among the people. The development of Bhakthi Movement played a vital role in the religious beliefs of the people of the district. The Alwars and Nayanmars, the *Nalayira Divyaprabandam*, Thevaram and Thiruvasagam the devotional hymns, had great influence over the Hindus. These devotional hymns rank high among the devotional literature of the world.

A large number of Hindu temples, which are associated with the religious beliefs of the people, have been built all over the district. These temples vary from very small street temples to very big temples. A few internationally famous temples are located in the district. The Varadaraja Perumal temple, the Kamakshi Amman temple the Vaikuntha Perumal temple,

* There are different opinions among the scholars on the birth and period of Adhi Sankara.

and the Ekambaranathar temple at Kancheepuram, Kothanda Ramar temple at Madurantakam and the Vaikunta Perumal temple at Thirukalikundram are a few that deserve special mention. These temples, which are very old and famous since their construction, attract thousands of devotees and tourists. They are, in fact, architectural beauties to enjoy. Historical background of these temples are dealt with in the chapter on: "Places of Interest".

As elsewhere in the state, the observance of fast on particular days of the month is an important aspect in the religious life of the Hindus in the district. The observance of fast is spread all over the months of the year and is intended as occasion for intensive contemplation of God. The day known as Vaikunta Ekadasi is sacred to Vaishnavites and the holy night Sivarathri for the Saivites, for the observance of fast.

The Chief deities worshipped by the devout Hindus of the district are Siva, Vishnu, Ganesh, Murugan and Ambal. Besides these, village Gods like Mariamman, Veerabadran, Iyyanar, etc., are also worshipped. The rural people worship different deities of their choice and beliefs.

Caste is an important consideration in the social structure of the society in the district. To perfect the caste system, caste organisations have found their roots which, as they stand, are endeared by many of the communities which have a reasonable strength. A brief account of the important castes and communities of the district is presented in the succeeding paragraphs Though, detailed note on the customs, manners, beliefs, etc., of each community is out of bounds, brief account of each of the principal castes in the district will depict a picture on status of castes in the district.

The Peasant society in the beginning of the British administration

In this district, then known as *Jahir* those dominant groups who belonged to the higher social strata in the caste system then prevailed in this area were the Brahmins (Some of whom had been given grants by kings around Kancheepuram, a holy centre) or Kondai Katti Vellalas. Both *Brahmans* and *Kondaikatti Vellalas* enjoyed the hereditary right to a share of the produce of land and a portion of labour of their farm servants (agrarian slaves). These dominant groups were called *Kaniyatchikaras* or *mirasidars* in Tamil and Persian respectively.

The *Kondaikatti Vellalas* had the *Adi Dravidas* - (Paraiyas by caste) as their farm servants while the *Brahmins* preferred *Pallis* (later known as *Vanniyakula Kshatriyas*) to them. Some of the *Pallis* had become *Mirasidars* themselves. Relations between the *mirasidars* and the agrarian servants was vertical. The *Mirasidars* had social and marriage net works which stretched throughout the 'Jahir' and to Madras city.

Some of the *Kondaikatti Vellalas* had been employed as government servants under the Nawab of Arcot. When the British took over the *Jahir* their services were continued and their privileges to cultivate the land at a reduced

level of tax or free of tax were also allowed. These rights were called *Maniams, Shrottiyams, inams* etc.

As important as the ties between the *mirasidars* and their farm servants was the relation between the *mirasidars* and literate *dubashes* (interpreters). They acted as brokers or agents between the *Mirasidars* and the East India Company. Many of the *Kondaikatti Vellala* dubashes were connected by marriage and kinship to *Kondaikatti Mirasidars* in the Poonamalli and other areas of the Jahir. These Kondaikatti Vellalas are presently known as 'Mudaliars' which term literally means persons of front rank. In the beginning, the company officials considered the Mudaliars as a great threat to their operations. Lionel Place, Collector of the Jahir (1794-1799) said that almost every domestic servant down to the lowest menial - employed by an European could be included in the connections of those (Mudaliar) *dubashes*. According to him these *Mudaliars* were able to use their contacts with the knowledge of Europeans to retain every inhabitant (in their own villages) in complete subjections.

Of the many rituals performed by the people in general and the peasants in particular, which need mention was the one celebrated at the close of the Tamil month Ani (June-July) when the revenue year ended. It was in the following month that cultivation in the Jahir was expected to start. F.W.Ellis, the famous orientalist describes the rituals as follows: "The whole slaves - (paraiyar - farm labourers) strike work collect in bodies outside the village and so remain until their masters (Mirasidars) by promising to continue their privileges, by solicitation, presents of betel (a mild narcotic indicating honour) and other gentle means, induce them to return. The slaves on these occasions, however well treated they may have been complained of serious grievances, real and imaginary and threaten a general desertion. The threat however they never carry into execution; but after the usual time everything having been conducted according to mamul (custom) refuse quietly to their labour". These yearly rituals not only renewed the relationship between the farm labourers and their masters but also rehearsal for rebellian against outside authority in general.*

Mudaliars

In this district, the Mudaliar community is numerically high, spreading in almost all parts of the district. Their role in the public life is very vital. They are, of course, divided into many subsects like Senguntha Mudaliar, Thondaimandala Mudaliar, and so on. The Sengunthar, otherwise known as Kaikolar is the principal weaving community in the district, producing large quantities of cotton clothes.

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* Eugene F. Irschiek - Peasants Survival Strategies and Rehearsals for Rebillion in Eighteenth Century South India - Peasants Studies Vol.I No.4, 1982, pp. 215-241.

The Kaikolars, particularly of this district, maintain that they were first brought into Tondaimandalam by Adondai, - a King, who placed them incharge of the various temples that he built in the country. Even among Sengunthars, there are several subdivisions. Most of them are Saivites. Tamil is their mother tongue and they employ Brahmins as priests for their religious observances. Murugan is their chief deity of worship. Once, they had hereditary headman called *Periathandakarar* or *Pattakarar* who was assisted by two subordinates sangili or *Gramani* and *Ural.* The Kaikolars were divided into seventy two *Nadus* or Desams which were subject to the authority of four *thisainadus* which, in turn, were controlled by the Mahanadu at Kancheepuram, the residence of the patron deity Kamakshiamman.

The Thisainadus were,1. Sivapuram Wallajabad, where the Kamakshiamman is said to have placed Nandi as a guard; 2. Thondipuram where Thondivinayakar was stationed; 3. Virinjipuram in the west guarded by Lord Subramanya: and, 4. Sholingapuram taken care of by Bairava.

But, now this system no longer exists. The Sengunthars are good artists at looms and they have earned a name for their products which have a good demand in the market.

The Tondaimandalam Mudaliars are known as Kondai Katti Mudaliars also, who belong to Vira saiva sect. Tl. y are numerous in Cheyyur and Chunambedu. Agriculture is their mainstay and they are noted for their skill in land management. This district has a good number of landlords and farmers as well.

The Thuluva Vellalas are a subsect of the Mudaliar community who call themselves as Arcot Mudaliars and Poonamallee Mudaliars depending on their habitats. Their main occupation is agriculture.

Brahmins

Brahmins in the district constitute a small percentage of population, but occupy a unique position in the society. They are the repositories of vedic knowledge, priests, purohits and astrologers. They are divided into two well known religious sects, *viz.*, the Saivites and the Vaishnavites. The Saivites are either Saivites proper of the Smarthas. The Saivites proper believe that there was only one God, *i.e.* Siva who is self-existent and that He is not liable to lose His personality, while the Smarthas, on the other hand, recognize the Tirumurthis , Brahma, Vishnu and Siva as equal manifestations of the supreme spirit and believe that the soul of man (Jeeva) is only a portion of the infinite spirit *Atma* and that *Jeeva* is capable of being absorbed into the *Atma.* Even among the Vaishnava sects, there are two principal sects in the district *viz.* (i) the followers of Sri Ramanuja and (ii) the followers of Madhavacharya (the Madhvas).

The Brahmins of the district belong, mostly, to Smartha and Vaishnava sects, each of which is divided and subdivided into a number of smaller groups based on sectarian, occupational, territorial, ritualistic and other differences. The *Vadamas*, the *Brahacharana*, the *Ashtasastram*, the *Vathima* or *Madhma* are some of the important sects of the *Smarthas*. Religious customs and beliefs do not vary greatly among these subsects. The Vadamas claim superiority over other sects. The *Vathimas* are famous for their economic habits and sense of corporate unity. The *Kaniyalars* are mostly temple servants and they wear Vaishnava marks.

The Vaishnavites in this district are divided into the *Vadagalais* and the *Tengalais*. These two groups are distinguished by the sacred mark on their foreheads. While the former put a 'U' shaped mark, the latter a 'V' shaped mark. Each one of these groups is divided into Srivaishnavas, the Vaikhanasas and the Pancharatras.

Though the Brahmins are supposed to learn Vedas and teach them to others and their profession is expected to be linked with religious activities, the current trend shows their engagement in superior, executive and clerical grades of government service besides having occupied high positions in private business houses and concerns. The Brahmins of the district are also land lords who, besides supervising cultivation, work in offices or practice as advocates in places like Chengalpattu, Tiruvallur, etc. Among the Brahmins, the Vaishnavite sect predominates in Kancheepuram, Uthiramerur, Tiruvallur, Oragadam, Madurantakam, Sriperumbudur and Thirumazhisai.

The Reddis

The Reddis, Telugu speaking people, who are found in large numbers in the taluks of Ponneri, Madurantakam, Tiruvallur, Tiruttani and Sriperumbudur are a cultivating class, having farming as their main occupation. These hardworking people wield wide respect and influence in the district as an agricultural community.

The Reddis of the district have several subdivisions, chief among which are Desur, Marasu, Pakanati, Palli, Panta, Pedaganti, Pokanati, Velanati and Yeslam. These names are derived either from the original place they hail from or the occupation they are engaged in. The Desur Reddis were so called as they are supposed to hail from Desur and the Morasus are so called because they used to weave mats and baskets. But, at present they are only cultivators.

The Reddis are neutral to both Vaishnavism and Saivism and hence, show no discrimination in following both the religious faiths. They worship a variety of deities like Thallamma, Nagarapamma, Puttamma, Ankamma and Muneeswara. They do not encourage widow remarriage, nor do they support intercaste marriage.

Like their male counter parts, the Reddi womenfolk are also hardworking. But, for working on the land, the womenfolk undertake all responsible work connected with agriculture. The Panta Reddi women wear a characteristic gold ear ornament called Kammal, a flat nose-ring studded with inferior rubies and a golden wire round the neck on which are tied the 'tali' and the 'pottu'.

The Reddis follow the customs of other people of the locality in disposing of the dead bodies. At the funeral pyre, the local barber, goes around the corpse, thrice, carrying a pot of water, followed by the son who makes holes in the pot. The ashes of the burnt bones are collected after the gap of a day, in a new pot, and consigned to the river or lake,

The Pathars or the Kammalars

The Kammalars, noted artisan community, are numerically strong in the taluks of Kancheepuram and Saidapet. They are also called Asaries, and *pathars*, whose main profession is making ornaments. There are members of the community who are blacksmiths and carpenters.

According to Edgar Thurston, the original form of the name Kammalan appers to have been Kannalan or Kannalar both of which occur in Tamil poems. (e.g. Thondamandala satagam and Er Ezhupathu). Kannalan denotes one who rules the eye or one gives the eye. When an image is made, its consecration takes place at the temple. Towards the close of the ceremony, the Kannalan who made it comes forward and carves out the eye of the image. The name is also said to refer to those who make articles and open the eyes of the people, i.e., who make articles pleasing to the eyes[9].

The Tamil Kammalars are divided into three endogamous territorial groups, *viz.*, Pandya, Sozhio or Chola and Kongan. The second named are found spread over the district. Kammalar, which is a general term, also refers to five occupational sections, *viz.*, Tattar or porkollar (goldsmith) Kannar (brass-smith), Tachar (carpenter), Kal Thechar (Stone mason) and Kollar or Karumar (blacksmith). Kammalars are also called viswakarma, viswakarmala and viswa Brahmin.

The Kammalars are Saivites and worship Lord Ganesa, the son of Lord Siva. The caste, has its own Gooddess Kamakshi Amman, who among the Kammalars, is known as Vrithi Deivam.

This deity is worshipped by all sub-sects of the caste and girls were, till a couple of decades ago, frequently named after Her. She is represented by the fire place of the smithy and bellows at which, the castemen work. Their own priests officiate at marriages, funerals and other ceremonial occasions. Like Brahmins,they also wear a sacred thread.

The corpse are, as a matter of convention, usually buried in a sitting posture, but now, they resort to cremation sometimes. Death pollution, as in

the case of some other non-brahminical castes, lasts for 16 days. Usually, a pandaram officiates at the death ceremonies.

Gramani

The Gramanis, otherwise known as Shanars, are the toddy drawing community. They are also called Nadars. This caste is scattered all over the district. They are industrious and hardworking. They were, in former days, employed as foot soldiers and body guards. They are said to be the immigrants from the northern coast of ceylon, where a similar caste exists under the name 'Shandrar'.

There are several sub-divisions in the community. There is nothing peculiar about their marriage or death ceremonies. The dead, except the first born infant, are generally buried or cremated. Widow remarriage is permitted in some sub-divisions, but not permitted in others. Though they are mostly Saivites, they have faith in their local deities.

The Vanniars

The Vanniars, an important farming community, are found numerous in Kancheepuram, Madurantagam, Chengalpattu, Sriperumbudur and Saidapet taluks of the distrit. In fact, they constitute a large population and have an exalted influence in the political and social life of the district. They claim to be kshatriyas and hence, call themselves *Vanniakula kshatriyas.* As recorded by Nelson in the Manual of Madurai District, "in former days, these Vanniyars held a good position among the people of south India"[10]. Armies of Vannias are often mentioned in Ceylon Annals and Hindu History of ceylon[11]. It is stated that a Pandya princess went to Sri Lanka and married its king and was accompanied by sixty bands of Vannias. According to H.A. Stuart[12], after the fall of the Pallava dynasty, the Vannias became agriculturists and agricultural labourers under the Vellalas. Barring a little percentage of Vannias who are engaged in trade and public service, the rest of them are mainly agriculturists. The Vannias of the district are also known as Naickers, Vanniakula Kshatriyas, Vannia Gounder, Kander or Padayachi. They are a united community. They are frugal and do not spend much on marriages. In some parts, they allow divorces, and widow remarriages. The Vannias of the district follow either Saivism or Vaishnavism but do not fail to worship their local deities like Mariamman, Ayyanar, Muneeswarar, etc.

In their social life, the panchayat system which is still in vogue, plays a vital role. The caste people have a headman called *Periadhanakkaran* or *Nattammaikaran*, whose decision on all matters affecting the community, is final. He heads all the ceremonial functions.

Their habits and customs resemble, generally, that of the other Hindus. The woman gives birth to a child, except the first one, in her husband's house, as the first birth takes place in her mother's house. The mother and child are kept in a separate room for eleven days after birth and on the 11th

day, she is given a bath and allowed entry into the house. During the postnatal period, the mother is given rich diet of jaggery mixed with ghee and spiced with dried ginger. When the child becomes three years old, it is taken to the family temple for tonsuring the head. Ear boring ceremony is conducted with the help of the local goldsmith. When a girl attains puberty, the maternal uncle is invited to make a partition in the Verandah of the house, using coconut leaves. The girl would be kept in seclusion for 11 days. A bunch of margosa leaves is kept at the entrance of this portion. On the eleventh day, the girl is given a ceremonial bath for which all the relatives are invited. They would bring with them a bag containing fruits, sweets, etc. A grand feast is hosted to these relatives. The dead are either burnt or buried depending upon the situation.

The Vannias of this district rank high in their social status. They are growing day by day and their development is phenomenal in all walks of life. A very good percentage of them have now entered Government service and are in the forefront. Equally higher is their status in public and political sphere and hence, they enjoy respect in the district.

Scheduled Castes

The general population of the district includes members of Scheduled Castes also. In this district, the Paraiyars, Pallars, Chakkiliars, Kuravars and Valluvans fall under scheduled castes. Population of the scheduled castes is presented in *Appendix - 4*.

The Paraiyars

The Paraiyars are agricultural labourers found numerous in all the taluks of the distrsict. According to Caldwell, the word 'Paraiyar' is derived from the word `Parai' (or drum) as the caste played on drums at marriages, funerals, village festivals and on occasions when Government or commercial announcements are proclaimed. However, the 1891 Census Report, contradicting the view states that it was only one section of the community which acts as drummers, and that the occupation was not confined to Pariars alone. It seems in the highest degree improbable that a large and at one time powerful community should owe its name to an occasional occupation, which one of its divisions shares with other castes. W.Francis, who authored the Madras Census Report, 1901, writes that the old Tamil poems and works of the early centuries of the Christian era did not mention the name Paraiyar, but contain many descriptions of a tribe called the Eyivs who seem to have been quite distinct from the rest of the population and did not live in the villages, but in forts of their own. Ambur and Vellore are mentioned as the places where they lived. They may have been perhaps the ancestors of the Paraiyars".

The Paria population of the Chelgalpattu-MGR district was described by Tremenheere, in 1891, thus :

Always badly nourished, clad, if at all, in the vilest of rags; eaten up with leprosy or other horrible diseases; hutted like pigs; untaught; uncared for and, unpitied"[13].

This might be so, when he saw them, at his time. But due to various Acts and measures by Government, their position has vastly improved. No longer such descriptions would be right nor would it hold water.

In his Manual of Administration (1879), Lewis Moore describes them thus:

In times, prior to British Rule, the whole of the Pariah community, without exception, were the slaves of the superior castes. The British administration freed this class as a community from the yoke of hereditary slavery and from the legal disabilities under which they suffered but they still remained (1878) at a low depth of social degradation. . . .[14]

On the position of the Pariars, "The Hindu", dated 7 August 1891 admitted that they were outside the pale of Hindu Society, but they had looked to the higher classes as their guardians and masters, who, however, could assign to them no higher position than that of labourers of the lowest order, generally doing the meanest and the most repulsive work of the village or town. It added that the Hindu religion recognized no provision for their spiritual needs as indeed the Hindu Industrial System allotted to them no particular industry and that the material, as well as the spiritual well being of the Pariars had been from time immemorial outside the solicitude of the Hindu legislators and philanthropists. Indeed, the writer of the Times employed no exaggeration when he charges the Hindus as looking upon these despised people as an altogether inferior race of mankind. Lewis Moore, however, ascribed that in religion, they were practically worshippers of villagae idols and demons[15].

Though Saivites, the Pariayars worship the female deities like Mariatha, Kali, Ponniammal and Mandaiammal in whose temples they offer rice, flowers, turmeric and on important occasions, a fowl. A subsect among Paraiyars in this district is Malas who are agricultural labourers earning on daily wages. These Malas, it is said, were once weavers, but had given up this profession in course of time and had begun to work as labourers in business centres of the district. These people claim to be migrants from Telugu State *i.e.* Andhra Pradesh. Their customs and manners differ very much from that of the Tamil Paraiyars as they follow the customs and manners of the Telugus. Like the Telugu people, majority of the Malas are Vaishnavites but they pay allegiance to the demons and village deities. Their own caste priests called Mala Dasaris perform offerings to the deities on behalf of the Malas. Even among the Malas of the district, we find subdivisions like Arava, Bova Marikimati, Morasa, Reddhibhumi, etc. Though divorce is common among the Malas, the man

has to pay a compensation to the wife if he wishes to send her away on no serious fault on her part. Widow remarriage is generally permitted but such marriages are performed with lesser ceremonies.

The Paraiyars who had held high positions in the social scale, later on, appear to have gone down. But they are picking up gradually due to Government's efforts to uplift them by showering several concessions. In olden days, as a rule, their houses were far away from those of the other community people in village. Most of them were illiterates and ignorants. Now, the Christian missionaries also have made great endeavours for their social and material uplift.

Among the scheduled caste people, the Chakkiliars are another caste group found sporadic in the district. They work on leather and eke their livelihood mainly out of this. However, many of them are also engaged as agricultural labourers. In social position and economic standards, most of them continue to occupy a lower rank in society. Their customs and manners do not vary much from that of their brethren castemen in other parts of the State. They are devil worshippers, paying allegiance to village deities. Widow remarriage is allowed among them.

But, the poor conditions of the low caste people have been improved owing to various measures. As long back as 1891, The 'Hindu' wrote,

> "The philanthropic efforts of the Christian Missionaries to improve the condition of the low castes deserve the warm acknowledgement of the Indian public. The condition of these castes is truly miserable. The Hindus do not recognise them as a part of their community and nothing can be more humiliating and intolerable than the treatment that the Pariahs and other low caste people receive from the Hindus of the higher castes. The Hindu Religion has done nothing for them except to prescribe a most object slavery as the lot for which alone, they are fit. The Christian Missionaries have treated them in an altogether different spirit. Moved by their deep hatred of caste distinctions and their sympathy for a despised and degraded class they have taken to low castes under their special patronage and already done much to raise them to a high social status. They educate them in their schools, help them in the advancement of their worldly prospect and elevate their moral and spiritual nature by a high religious training. Apart from the help of the Missionaries, the Pariahs have no chance of rising above their present condition of extreme poverty and degradation. An effort is now being made by these benevolent foreigners to move the Government to interest itself in the condition of the low castes"[16].

Thus, started the ameliorative measure which in course of time gained momentum and took various forms ranging from providing constitutional

protection to various welfare measures initiated by the Governments, both at the Centre and in the State. However, the seed for such a measure was first sown by the Christian Missionaries which was the cause for conversion of low caste Hindus to Christianity.

Scheduled Tribes

As presented in the 1991 Census, the total Scheduled Tribe population of Chengalpattu-MGR district is 57, 872 of which, 29,321 are males and 28,551 are females. (*Appendix - 5.*) Among this population, majority belongs to Irula community which is the second largest tribe of Tamil Nadu. Villian[17] is another name for the Irulas of Chengalpattu-MGR distrisct. Irulas are found in all the 27 panchayat unions of the distrcit. The largest (4656) concentration of this population is found in Pallipattu Panchayat Union whereas the lowest (1715) population is in Villivakkam Panchayat Union. The Irulas' population, Union-wise is presented in *Appendix - 6*[18].

Irulas are classified into various sub-groups based on linguistic and social variations, as detailed hereunder: (1) Melanadu Irulas; 2) Kasabas; (3) Vettakada Irulas; (4)Uralis; and, (5) Villiyans. The first four sub-groups share similar ethnic and linguistic features with slight variations. The Villians are ethnically and linguistically different except bearing the name 'Irula'. Villians speak Tamil dialect and follow Tamil culture and traditions, whereas the remaining four groups speak different dialects of Irula language.

The name *Irulas* is derived from the Tamil word *Irul* which would mean darkness or night. They may be called so because of the colour of their skin (dark) or the place (jungles) they inhabit and hunt. The terms Irulas, Kasabas, Uralis and Villiyans or Velliyans are used in different regions of the State to denote the same tribe. Villian is the common name for Irulas of Chengalpattu, South Arcot, Salem, North Arcot, Dharmapuri, Tiruchirappalli and Thanjavur districts. Villian is derived from 'Villu' which means 'bow' and hence, 'Villian' means 'bowman', *i.e.* hunter. The appellation "Pambu Pidikiravan" (in Tamil) or Pambukaran (snake man) is also generally used. The anthropologists call them by different names such as Iraligas, Iruligas, Ten Vanniyas (South Arcot), Venupallis (South Arcot), Pujaris (Priests) Chenchu (West of North Arcot) and Aravayenadis (North Arcot).

Many of the Chengalpatu Irulas are "dark skinned, have narrow chests, thin bodies and flabby muscles, reminding in their general aspects of the Yanadis of Nellore"[19]. When Edgar Thurston brought out the volumes on Castes and Tribes of Southern India, the clothing of the Irula tribe, as described by him, was reduced to a minimum - dhoti and langoti of dirty white cotton cloth or a narrow strip of gaudy Manchester piece good. They had their hair worn long and ragged or shaved with Kudumi (tuft) similar to that of higher classes. The moustache was slight and the Irula had a billy-goat beard. This observation has become obsolete as is of today they are also exposed to all the facilities

that the othermen enjoy and tend to imitate them. Much the same way, their profession has undergone several changes. Around 1900s, their chief source of livelihood was husking paddy in return for pice, rice and sown fermented rice gruel, which was kept by the higher classes for cattle. While husking the rice, they ate the brawn and also had the habit of stealing the rice while husking[20]. They have now dispensed with this activity, but shifted to agricultural labour and cultivation[21]. They have become largely labours and working in agricultural lands, brick making, etc. Some of them still continue to be hunter gatherers in village forests. They collect roots and greens from the forest for their food. Irulas trap reptiles, rodents and termites for food. They catch rats through the techniques of snaring, netting, digging and smoking out. Usually, they eat termites when they come in swarm during the monsoon season. They collect forest produces and firewood and sell them[22]. According to Neil Thin, "most Irulas work intermittently subject to the vagaries of immediate need for each and important seasonal variations in the availability of work. Vast majority of Irulas eke out their cash and non-cash income by catching snakes, rats, termites and other wildlife"[23].

The settlements of Irulas are small, generally between five and thirty families, most commonly about ten. Most of them are on the fringes of villages and often fairly isolated, several kilometres away from the nearest main road or large village. Contrary to the normal conception of a *tribe*, Irulas do not, in any sense, constitute a political unit. A typical settlement will have contacts with a handful of other Irula settelments with whom they have marriage contact, and have little knowledge about the rest of the Irulas in the district. This attitude has prevented them from acting in a coherent manner to achieve any political ends. They do not also realise their rights and the benefits available to them through Governments in various aspects. According to Neil Thin, they seem to lack any sense of community spirit and communal self-help. If they lend each other money in emergencies, they charge the usual outrageous money lenders' interest rate of 120 per cent. (*i.e.*10 per cent per month)[24]. Though the Irulas engage themselves in several other items of work, those who still live primarily by snake catching, have a pride in their occupation.

Irulas, as described by Thurston, were basically forest dwellers and hunter gatherers who possess remarkable skill in catching animals, particularly snakes. Presently, the Chengalpattu Irula's way of life has changed radically from previous generations. No longer they live in forests but are settled in small family units on the borders of different caste villages. Due to proximity of these villages, the Irulas have adopted the life styles of the castes around which they live. They are becoming part of the caste system and are ranked above the scheduled castes[25].

An interesting story/a myth, referred to by Thurston as narrated by Mackenzie details the origin of the Irulas thus:

> "After the deluge (Yugapralayam, *i.e.* change from one yuga to another), the Villars or Irulas, Malayans and Vedans, supposed to be descendants of a Rishi, under the influence of a malignant curse, were living in the forests in a state of nature though they have now taken to some kind of covering, males putting on skins and females stitched leaves. Roots, wild fruits and honey constitute their dietary and cooked rice is always rejected, even when gratuitously offered. They have no clear ideas about God, though they offer rice (wild variety) to the Goddess Kanniamma"[26].

The legend runs that a Rishi, Mala Rishi, by name, seeing that these people were much bothered by wild beasts took pity on them and for a time lived with them. He mixed freely with their women and as a result, several children were born, who were also molestsed by wild animals. To free them from these, the Rishi advised them perform do Pooja to Kanniamma. Several other Rishis are also believed to have lived freely in their midst, as a result several new castes arose, among which were the Yanadis who having come to towns, take food from other castes, eat cooked rice, and imitate the people amidst whom they happen to live[27].

Although the Irulas of Chengalpattu today have not heard these particular myths, they believe that they have a special relationship to animals and snakes, and non-Irulas value the powers of the Irula pujaris to heal minor snake-bites. Though vague, they have an idea of having originated as a snake-catching and hunting section of a royal family. They say that they are *rajas* and some others say that this was through marriage of their women into royalty, while a few others claim direct descent royalty in the male line.

The Irulas are experts in identifying and gathering medicinal herbs, particularly so, the ones which are useful in snake-rat and insect bites. They are experts in snake medicine which is kept as a secret known only to the elderly people.

Religion

Like most other plain people of Southern India, Irulas profess Hinduism. The beliefs and practices of the largely Hinduied Irulas are hard to be distinguished from practices which they have adopted in imitation of ordinary Hindus. By the beginning of the 20 Century, the Irulas of this region were described by the Census Report as *semi brahminized* forest tribe who speak a corrupt Tamil. Today, it is not possible to generalise about the degree of Hindunization of the Irulas, as there is a great deal of variation between those in villages and towns and those in more isolated places. Many groups utilise the services of brahmin (Iyer) priests for such occasions as weddings and funerals, and many worship Vishnu and Siva in the village temples used by other Hindus. All of them pay homage to the Virgin Goddess Kanniamma,

and many go to Mahabalipuram in February for the annual Kanniamma Pooja, but there is nothing in these practices, which are exclusive to Irulas" Albeit their worshipping other Gods, the Irulas regard Kanniamma as *Their* Goddess, and most settlements, however small, have a temple for the Goddess. The temple may either be a couple of pots and a clay lamp on open ground, or may be a sizeable mud and palm leaf but with more elaborate representation inside. The "Sapta Kannigai" (Seven Virgins) may also be represented, either by pots or simply bricks. Kanniamma is regarded as goddess of the forest. Mariamma, the goddess of disease, especially of small pox, and Yellamma also worshipped and may be seen as incarnations of Mariamma. At the Kanniamma festival held in Mahabalipuram, the Irulas stay throughout the night, and perform pujas at small makeshift temples in the sand, giving offerings of rice, turmeric and fruits. At the dawn, then, they take bath and spend the day, drinking, singing and dancing.

The role of the Pujaris of the Irula community (they are often called 'buzali') is very important at festivals of this kind and other ones. He (Pujari)holds a hereditary right, which passes from father to eldest son, sometimes several sons, as a man gifted with special power of being able to communicate with Kanniamma in a trance state. The pujaris, usually, will have long hair, generally tied in a ponytail, and some cultivate a rishi like appearance. This position is, often, combined with that of medicine man. The special skills of Irulas in healing snake bites and in general herbal lore have long been recognised. Till today, the medicine men have not revealed the secret of the medicine which they guard very jealously.

The *Kanniamma Varnithal*, which is a role of the Pujari, is being described by K.R. Bahadur, an anthropologist, thus:

When the client approaches him, the Irula picks up his drum, warms it over the fire or in the sun. He worships the goddess by breaking a coconut, burning camphor and incense. Closing the eyes, he beats the drum and shakes his head this way and that, all the time being sprinkled with turmeric water by his wife. After sometime, he begins to shiver and to perspire profusely, a sign that the goddess has possessed him. His wife loosens his tuft and on her doing this, he hisses more vigorously even hissing like a snake. He becomes calm when his wife eulogises the goddess, and begins to answer questions put to him by his wife. At the Kanniamma Puja at Mahabalipuram, as the practice is still in vogue, the Pujaris act as 'intermediaries' between Irulas and the Goddess. She may be consulted at any time, for varied reasons ranging from finding out a suitable marriage match to finding out the cause and remedy for a particular ailment. The wife interprets the sounds made by the pujari in his trance and the answers may be of a very practical nature — hospital treatment recommended for a serious problem, a particular herbal remedy for a minor ailment or puja to a particular deity or even to an ancestor following an accident. By virtue of these consultations and the reliance on

his medical remedies, the pujari is obviously in a position of a considerable influence. The position of the pujari, howewver, does not always to be clearly defined; families may use their own medicines and preside over their own rituals such as wedding and funerals without calling themselves pujaris and the pujari is by no means always the most forthcoming and evidently respected member of a community.

Marriage

The Irula marriage takes place only among the Irulas. Though they say that they find the spouses from all over the district, it seems, in practice, that they intermarry within a fairly narrow range of other villages. Rarely, they arrange marriages between two peoples living in the same settlement, except occasionally in some of the very large settlements[28]. Irulas are generally, monogamous, but a few polygamous unions are also found. The existing system, in majority of the marriages, is arranged marriage. Bride price is paid in cash. Among the Irulas, divorce and remarriages are permitted. Widow remarriage is not uncommon. Though there are a few cases of men with two wives, there is no woman with two husbands. The Irulas are very strict in following the marriage symbols[29].

Thurston found that they recognised tribal subdivisions in a vague way for marital purposes. This practice seems to exist to a certain extent even this day. Neil Thin described that wealthy Irulas, particularly those in town (*e.g.* Thirukalikundram) called themselves *naikars* and only married other naikars.

Incidence of cross-cousin marriages are more among the Irulas as nearly half of the men marry, either mother's brother's daughter, father's sister's daughter or sister's daughter (in that order of explicit preference). Thurston said that typically a young couple would simply elope and that a small ceremony would be held when they returned. There seems to be a growing insistence on elaborate wedding ceremonies, arranged marriages, and coulples staying together.

Weddings, presently, among Irulas have become extremely costly affairs, as it exists among other castes. The parents of the groom spend a few thousand rupees on the celebrations and the bride's parents are expected to spend the equivalents on clothes, jewellery and household utensils. The guests at the wedding bring cash contributions to the couple, considered as a loan, or returnable at future weddings. In some of the areas, wedding is a simple ceremony consisting simply of tying the tali (Sacred thread) without any ritual and feeding a small family group.

A newly married couple often stays in the same house along with the groom's parents for several months or years. Shortly before the birth of the first child, the woman returns to her parent's house where she remains until atleast three months after giving birth to the child.

Funeral

Dead are buried on the first or second day after death, they are laid on their backs, head to the south, feet to the north and face turned to the east. At the burial ground, a pot of milk is broken over the grave above the head; on the second day, water is poured over the grave. Both these actions are considered to clean the sins of the deceased. On the sixteenth day, the eldest son is given a ritual both by his relatives following which is a grand feast. The following day, the family are fed a meal with meat, from which it has abstained since the death. However, these elaborate ceremonies are not performed after the death of a child under about six. Like in marriages, expenses in deaths also vary from settlements to settlements, depending of course, on the capacity of the family to spend. It ranges from lavish spending to very meagre spending. Puberty and birth pollution are observed.

Clans are not found among Chengalpattu Irulas. Nuclear families are predominant. Strong unity and fraternity are not found among them. Tribal Council does not exist among Irulas. Male equigeniture is the accepted norm of Irula tradition. They follow patrillineal line in succession and inheritance of property. Irulas participate in village Panchayat elections also.

Occupation

Irulas have become largely labourers working in agricultural lands, brick making, etc. As stated earlier, some of them still continue to be hunter gatherers in village forests.

Irulas are very experienced snake-catchers. It is not clear since when this has been the traditional occupation of the Irulas. It might, most probably, be induced by some foreign skin traders who began to buy snake skins early in the last century. Even the Irula children are trained in snake-catching from childhood. The Irula method of snake catching involves two pieces of equipment, *viz.*, a crow bar and sack. The former is used to dig the snake out and the latter for holding the snake once it was captured. The Irulas say that many of them began relearning the art about twenty years ago when there was a boost in the skin trade, but, that the ban by the Government of India in 1972, on killing and removing the skins of snakes, forced many of them to abandon the occupation. However, as Neil Thin reports, many still freely admit that they are selling snake skins for sums varying from Re.1/- to Rs.35/- depending on the variety and nature of the skin. Many combine snake-catching with agriculture either catching in the evenings or only in the wet season or whenever they have no other occupation. They rely on income from this activity to fill in the frequent gaps when no other source of income is available. "Because of diminishing natural resources, they having found themselves without a livelihood, forced to subsist at a hopelessly inadequate level with no land for cultivation and little chance to compete on the job market. Previously, many were engaged in catching snakes for the snake

skin industry. Later they dispense with this practice, after the implementation of the Wild Life Protection Act of 1972"[30].

Welfare Measures

In order to help the Irulas, Romulus Whitekar, an Indian herbetrologist and conservationist, who founded the Madras Snake Park and the Crocodile Bank at Mamallapuram, started the Irula Snake Catchers Industrial Cooperative Society, as an organisation designed to enable the Irulas to continue to utilise their skills and experience and at the same time to improve their precarious economic situation[31]. This Society was formed with the prime objectives of 1. Enabling Chengalpattu Irula tribe to survive, become economically viable and carve a place for itself in today's world; and, 2. to use their skills for the extraction of snake venom to be used in the production of antivenom serum.

Similar to the Irula Industrial Cooperative Society, the Irula Tribal Women's Welfare Society was formed in 1986 to help the Irula Women make productive use of their forest related skills while at the same time promoting the reafforestation of the degraded dry evergreen forests of Chengalpattu district.

The main objectives of the society[32] are 1. to provide a model reafforestation and watershed management project in our area subject to frequent drought; 2. to develop a social programme which covers literacy, health, and organising the Irulas to fight for their basic amenities and rights; 3. to study and document the Irula medicine system and their other tribal technologies; 4. to devise income generation programmes, to provide supplementary income like cultivation of mushrooms, medicinal herbs, making mud blocks for house construction and other appropriate home industries.

Now, the Irulas do not kill the snakes, but leave them in the scrub jungles, after extracting the venum. It is, in accordance with the plans of the Cooperatives to start catching and extracting venom* from the different snakes, and release them indigenous to that region[33]. The venom that is collected is sold to recognised institutions in India for the production of anti-venom serum.

Irulas take soft beverages like tea and coffee. Their conception of good tea or coffee is based upon its sweetness. Drinking alcoholic beverages is widely prevalent among them. They pay less attention to the quality of

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*Romulus Whitekar writes on the cooperative thus: "The Venom extraction project has a number of unique characteristics. It is the first Indian Project that is legally catching wild snakes for venom extraction and has made venom production a self-help cottage industry for tribals. The venom Industry in India had been operated in the past by entrepreneurs who illegally bought snakes from the tribals, with no interest in the fate of the tribal or the snakes. The Cooperative, however, ensures the maximum returns for the tribals".

food. Majority of their children, it is found, suffer from malnutrition. Tobacco chewing is a common habit among both men and women and the Irula men smoke bidi and cigarettes.

Yenadis

Apart from the *Irulas*, Yenadi is another tribe that live in the district. The Yenadis are a dark skinned platyrrhine tribe, short of stature and found numerous in the areas, surrounding Pulicat lake. They speak a corrupt Telugu.

Different theories have been advanced on the origin of the name. According to one, it is from 'Yenarm' meaning 'boat' in Sanskrit and 'Adi' which is interpreted as a livelihood, *i.e.* those who earn their livelihood through boating[34]. But, the Yenadis could not be credited with a sea faring avocation in the earlier days of their existence; nor were they known for such a profession at any time. Hence, the theory does not hold water. Another view that the name Yenadi is a corrupt form of the Sanskrit word 'Anatha' which means 'leaderless', has not been clearly established. A more natural and perhaps correct interpretation of the word will be to treat the word 'Yenadi' as the corruption of the Sanskrit word 'Anadi' which means, 'without a beginning'. This may hold good because the origin and the original abode of the tribe are not known clearly.

They were, it seems, inhabiting the wilds near Pulicat lake which was later inhabited by the Reddis of the Telugu area, who enslaved Yenadis gradually. Though the Yenadis could not boast of either recorded or unrecorded history to indicate their original home, and though their earliest or later life has not been handed over to their posterity in appreciable folklore, they are believed to be one of the earliest of the races that inhabited the Great Indian Peninsula[35].

As found in the 1891 Census Report, there were 89 sub divisions among the Yenadis of which two important divisions, based on numerical strength, were Chenchu and Manchi. The Yenadis are expert anglers catching fish with a triangular net or wicker basket. They are also experts in diving and catching hold of fish concealed in crevices of rocks or buried in mud. They assisted Eruopean sports men by marking down the spots for angling. The Yenadis were good shikaris.

The Yenadis live in low conical huts, rudely built of bamboo and palmyrah grass or millet, stocks, with a small entrance through which grown up people have to creep. Their food habit is not different from the rest of the population.

Their places of worship are temples but houses called *Devara Indhu*, set apart for every centre. They worship a household God, a village goddess of local importance, and a deity of wider repute and influence. The household God, invariably, is the *Chenchu Devudu*. Polaramma, Ankaramma, Subbarayudu, Venkateswaralu, Panchala, Narasimhalu, etc. are the local

deities that they worship. They have their own priests. The ordinary Yenadi worships only on important occasions like marriage, funeral, etc. Like Hindus, the Yenadis wear sect marks following their faith either in Saivism or Vaishnavism. Some Yenadis have converted to Christianity.

Yenadis' customs and manners vary much from other people as well as other tribes. The marriage ceremony is no indispensable necessity. The Adan Yenadis, as a rule, avoid it but, the Reddi Yenadis always observe it. Divorce is easily obtained. Adultery is not taken very seriously. Widows may live in concubinage. Widowhood involves no personal disfigurement or denial of all the emblems of married life. Pregnancy before marriage is not a taboo. Polygamy is allowed. The marriage ceremony of Yenadis has undergone several changes. Their marriage rites have now become a copy of the high caste people of the Telugu area.

On attaining puberty, a Yenadi girl occupies a hut, erected for the purpose. On the ninth day, the hut is burnt down, and the girl cleanses herself from pollution through bathing. The postnatal mother is fed for three days on the tender leaves or cabbage and then on rice. The bady is named by a Soothsayer. The Yenadis bury the dead. The corpse is laid on leaves in front of the hut, washed and clad[36].

The Christians

Numerically, the Christians are second to the Hindus in the district. The British Rule in India was the cause for the spread of this religion. Like other districts, Chengalpattu-MGR district has found the roots of Christianity through the Britishers, whose influence, due to proximity of the district to Madras city, the headquarters of the British Rule, over the people of the district, was greater. Christians are found predominantly in St. Thomas Mount area.

The Muslims

The Muslims are third in population strength and are concentrated in Kancheepuram and Wallajabad areas. The Muslims of the district are largely of two mixed races - the Marakkayars and Labbais. Pathans, Arabs, Syyids and Sahibs are also found here. The Muslims of the district are ardent. They adhere to the injunctions of the Holy Koran and observe the five principles preached by it.

All pious Muslims of the district observe fasting during Ramzan. On the day of *Idul Fitr'* which is the first day of the month following Ramzan, the Muslims wear new clothes and give up the fast, by joining the feast. They observe *Bakrid,* the feast of sacrifice, too, with great devotion. Bakrid and Ramzan are the two important festivals for them. Muharram, is celebrated in the first month of Mohammaden era.

The Buddhists

Buddhism had once found its root in this district particularly in Kancheepuram which is one of the seven sacred cities of India and is the headquarters of Chengalpattu-MGR District.

Hieun Tsang, the Chinese traveller-scholar from China who visited Kancheepuram has recorded that Buddhism in the city had a strong influence. He refers to several hundreds of *Sangharamas* and a large number of priests at that time[37]. History speaks of the deep root that Buddhism took in the city of Kanchi about the first century A.D. Its influence began to decline in South India, when there was great awakening among the Hindus under the influence of Alwars and Nayanmars. Lack of Royal patronage by the Pallavas, Cholas and Vijayanagar kings led to its declining popularity and gradual decay. However, sporadic groups of Buddhists were preaching the principles of Buddha Dharma which took care of the existence of this religion, till the end of the 13th Century A.D. During the 7th Century A.D., there were a few *Viharas* in this city, where the Buddhist monks preached the Buddhist path to salvation. Bhiktus had held discourses in these viharas to which Buddhists from several countries paid visit[38]. Kanchi has produced Dignaga, Bodhi Dharma and Dharmapala who set high standards in the mastery of Buddhist learning Acharya Dignaga is said to have served in the Nalanda University with great distinction. He is such a great scholar that he was well versed in Mahayana and Hinayana systems and has produced many standard works which are admired and appreciated by the Chinese and Japanese even today.

Bodhi dharma, the founder of Dhyana system of Buddhist philosophy, which is known as Zen system in Japan, is greatly respected and revered. Dharmapala, also belonged to Kanchi, who abandoned worldly life in his youth, became a great teacher at Nalanda. He has written many books on Buddhistic logic and metaphysics.

The glory of Buddhism diminished gradually and its popularity declined owing to several reasons. At last, it found its zenith in the district and mauled thoroughly by Hinduism. There is nothing to show at present, the existence of Buddhism in this district save that of the old and interesting group of monuments on the seashore of Mamallapuram.

> *"The revival of Saivism by Sri Sankara, and of Vaishnavism under its able exponent Sri Ramanuja contributed in a large measure to the decline of Buddhism and Jainsim"*[39].

The Jains

Kancheepuram was a centre of Jains for centuries past as evidenced by a number of ruined Jain cave beds hewn in rocks found in the district. The Jain temples at Arpakkam and Makaral are ancient temples where the Jains pay their devotion. The present day Jains are the migrants from other States, who are engaged in money lending business.

Jainism flourished in this district during the Pallava period (i.e. 300-866 A.D.). The Jains in the district are idolators, - their idols being always male figures similar in appearance to those of the Buddhists. Their extreme veneration for animal life is remarkable. They refrain from eating flesh; nor do they take food or drink water after twilight. They have scripts of their own, and their customs are generally in conformity with those of the Brahmins.

The Jain temples at Thirumalai and Panchapandavarmalai are very important for them where the Jains of the district pay their homage.

Intercaste relations

The relationship between different caste people is very cordial except for a few sporadic clashes which occur over trivial matters. However, one could not forget the differences between the Vadagalais and Thengalais of Kancheepuram over applying a mark on the forehead which, though appears trivial, reflects the religious sentiments of these two sects, despite they being the Hindus. The battle continued for several years, - before being settled by Supreme Court, the Highest Court of the country. The rigidity and intolerance have all now gone as a result of advancement in several fields. Percentage of educated has gone up and respect for human value has been realised. The communication facilities that narrowed down the distance between not only people but the places as well, play a vital role creating cordial atmosphere. Such fanatics of religious tenacity, have gradually vanished and contacts have become more, resulting in harmonial atmosphere. In recent years, there has been manifest, among the better educated classes, a certain feeling of resentment against the trammels of the caste system. This feeling has grown stronger and resulted in liquidation of caste barrier.

The general social movement, intercaste relationship and interpersonal relationship between different castes in the district are in peaceful amity and sustained cordiality.

The interreligious relationship in the district is marked by social harmony and coexistence. The relationship between the Hindus and Muslims, between the Hindus and Christians, and between the Muslims and Christians is harmonious and cordial. They mingle freely with each other. The religious intolerance which often raises its swollen head, in other parts of the country never have influence, over the people of this district. A few sporadic occurrences, that are not serious in nature, might be only momentous and out of passion. However, they do not allow the rhythm, of normal cultural life to be disturbed by any fanatical religious beliefs.

New religious reform movements

New religious or social reform movements have not seen their birth in this district, though those found their dawn in other parts of the State have played a significant role in shaping the religious sentiments and social awakening of the people of this district. Ramakrishna Mission and Theosophical

Society, for example, have contributed a great deal to the breakdown of severe caste barriers. Sri Ramakrishna and his disciple Swami Vivekananda played an important role in awakening Hindu Society, to follow the true religious injunctions in their social and corporate life.

Mahatma Gandhi's politico-social reforms, *viz.*, eradication of untouchability, right to enter the temple for all the people, etc. influenced the people of the district considerably. To eradicate the stigma attached to untouchables, Gandhi caused to name them Harijans (*i.e.* the sons of God). The Government of India have now enacted laws to safeguard the interest of this class of people.

The Self Respect Movement, started by Periyar E.V. Ramasamy of Erode at the beginning of this century, was responsible for liquidating untouchability and caste rigidity. It fought against caste superiority and caste exploitation which was, in a way, responsible for equality and self-respect for the individuals. This movement advocates a caste free society. Several agitations, which this movement undertook, were instrumental in the uplift of the depressed classes. Dr. C.N. Annadurai, the true disciple of Periyar, who hailed from Kancheepuram (and whom we are dealing separately in this chapter), was responsible for propagating the objectives of the Movement throughout the State in general and in the district in particular.

SOCIAL LIFE

Joint family system

The district is predominantly rural in character, despite its proximity to the city of Madras. The rural character has enabled the joint family system to have stronghold among the people from very early period. The Joint family system known for economic benefits and integration, homogenity and stability had worked so well for a very long period in rural areas. But, of late, this system, like any other system, by compulsion of time, due to Industrialisation, Urbanization and individuals' disinterest in the system, apart from losing its value, has lost its ground as well. Several industries have sprung up in places like Ambattur, Avadi, Ennore, Tiruvallur, etc., which opened new avenues of employment to the people of the district. This has resulted in large scale migration of people, particularly from the rural parts of the district which, in turn, has caused a break in the Joint family system.

Spread of modern education is another cause. The emancipation of women and their employment in the city as clerks, officers, teachers, labourers, etc., has quickened the process of decline of this system. This joint family system has been gradually replaced by individual families.

Property and inheritance

The law relating to inheritance rights, is almost common in the State in that the patrilineal system of inheritance among the Hindus is in vogue. It

is the widely prevalent and predominant system of inheritance and succession. Among the Vanniars, Mudaliars and Brahmins, lineage is traced only through male members and the property of the father normally goes to the sons. But, the Government of Tamil Nadu have enacted a law, in 1990, to enable even the daughters to have a share in the father's property.

Among the Muslims, though lineage is traced through the male members of the family, women are also entitled to one third of the property. As for the Christian community, it adheres to the patrilineal system of inheritance. Among the Scheduled Caste and Tribe people, there is no organised pattern of inheritance.

New legal enactments and their influence on social life

Many legal enactments were made in recent years which influenced the social life of the people to a great extent. The old evil practices of untouchability and unapproachability were sapping the vitals of the Hindu Society. Some sections of the society were not even permitted to go near or enter the temple. The Self-Respect Movement, started by Periyar E.V. Ramaswamy stimulated the so called low caste people to fight for temple entry. This demand for removal of untouchability and other social disabilities was fostered by the Indian National Congress Ministry in the State which passed two Acts *viz.*, The Removal of Disabilities Act (Madras Act XI of 1938) and The Temple Entry Authorization and Indemnity Act (Madras Act XII of 1939). These two Acts were further modified and amplified by three more Acts passed by the Central Government in 1947 and 1949 (Madras Act XI of 1947, Madras Act V of 1947 and Madras Act XIII of 1949). The first of these Acts prevented all discriminations against the members of the Scheduled Caste in secular Institutions, like refreshment rooms, hotels, boarding and lodging houses, laundries, etc., The second Act, which replaced the earlier Act of 1938, conferred on the members of the Scheduled Caste the right of entering any Hindu Temple.

At present, child marriage is almost non-existent, widow remarriage is not prohibited, and intercaste marriage is not a taboo. A number of Acts have been passed from time to time to legalise marriages between members of different castes. This enactment eradicates the evils of caste rigidity, through civil marriages. The Child Marriage Restraint Act, 1930, better known as Sarada Act, penalises Infant Marriages, which are totally banned in the district and the public too do not favour such marriages. This enactment has fixed the minimum marriageable age for boys at 18 and for girls at 14. This has been amended to fix the marriageable age for boys as 21 and for girls as 18. The Hindu Marriage Act, 1955 legalises divorce under various circumstances. This has sanctioned some social liberties for women. The Dowry Prohibition Act, 1961 penalises those who demand dowry. But, in practice this could not be enforced strictly.

MARRIAGE AND MORALS

Monogamy and polygamy

Before the enactment of The Hindu Marriage Act, 1955, polygamy was prevalent among some sections of the society, especially among the higher strata of society. But, this Act which was codified and reformed the law relating to Hindu marriage all over the country, has made monogamy both general and compulsory among all classes of Hindus. Inspite of this, sporadic occurrences of polygamy cannot be ruled out. Among the Muslims of the district, marriage is not regarded as a religious sacrament but a secular bond and for them, polygamy is not prohibited either in law or by custom, though the public opinion is always different. For the Christians of the district, monogamy is the rule and polygamy is tabooed by religion, law and custom. Among the scheduled castes, polygamy was not a sin in the past. But now, morality has changed very much and they do not permit polygamy. Among the Scheduled tribes, polygamy was in vogue for a long time and the Irulas and Yenadis allowed polygamy according to the social status of person concerned. Even those tribals have now switched over to monogamy.

Traditional marriage customs

Marriages, traditionally, take place only among the same caste people. Intercaste marriage is neither common nor is encouraged. Intercaste couples are generally treated with contempt. This normally happens, when a caste Hindu marries a scheduled caste. Neither the children of brothers nor those of sisters could marry. Save that of Muslims, other communities observe this practice. It is a general custom among the people of the district to marry within relations. It is considered that proper match for a boy is the daughter of his maternal uncle or his paternal aunt or his sister. Almost all the communities of the district are split into endogamous sub-divisions outside which marriage is prohibited.

Among the Muslims, the marriage is commonly between a boy and his maternal or paternal uncle's daughter. Marriage between a boy and his sister's daughter is strictly prohibited. Among the Christians, marriage between a boy and his maternal uncle's or paternal aunt's daughter is the established custom. They follow, in this respect, the customs of the Hindus. Widow remarriage is, though not generally accepted, in vogue among some communities.

Marriage customs and rituals

The marriage customs and rituals differ from community to community. Several rituals which should be followed in a marriage are conveniently ignored. Though it would be impossible to describe the marriage customs of each and every community, it would be pertinent to describe for some of the important communities which are predominant in the district.

The marriage of the Brahmins is, usually, held at the bride's place, (But, nowadays, these marriages are conducted in marriage halls which are common to both the sides). The ceremonies start with mock pilgrimage performed by the bridegroom who is dressed like a pilgrim and who sets out on a mock pilgrimage to Kasi (known as Kasiyatra) in a procession with all fan fare. On his way, his would be father-in-law, intercepts the procession, dissuades the groom from going on the pilgrimage and requests him to marry his daughter. Thereupon the groom signifies his consent, returns to the marriage hall where the bride and the groom are seated together and offered milk and banana. Then the Purohit, who officiates at the wedding, pronounces some mantra and proclaims the names of the parties and their Gotras. After this, the girl is given away through a ceremony to the groom and then tying of *tali* (Thirumangalyam) takes place, when the girl is seated on the laps of her father. While tying the tali, the priests pronounce Vedic verses. After performing certain oblations in the sacred fire, the groom takes the right foot of the bride and makes her touch the grinding stone thrice. This is known as Ammi Midhithal and has reference to the legend of Ahalya in Ramayana. This is followed by the ceremony, Arunthathi Parthal grazing the pole star during which the Arunthathi star, an emblem of chastity, is gazed by the bride. After these ceremonies, the couples go round the sacred fire seven times which marks the end of wedding ceremonies.

The Vellalars or Mudaliars observe some common essential customs. Their marriage ceremonies are usually performed in the Puranic fashion with the Brahmins officiating as priests. The Vellalas and Mudaliars intermarry among the different sects of their castes. Some Vellalas observe the Brahminical customs with regard to second and third marriages. If a man marries for a second time, after the death of the first wife, he has to first marry a banana tree and cut it down before tying the tali, (the sacred thread). In the case of a third marriage, he has to tie the tali to an *Calotropis gigantea* plant before tying one around the bride's neck.

The Reddiars' marriage, almost on the line of the Brahminical marriage, starts with betrothal when the party of the groom go in procession accompanied by musicians and women carrying betel, coconut, plantain and other fruits and turmeric, on plates. The bride is presented with a new set of clothes which she wears. A female relation gives her three handful of arecanuts, a few betel leaves, and the bride price and jewels tied up in a turmeric smeared cloth. Then, the fathers of the contracting couple exchange betel.

On the wedding morning, the groom's party accompanied by a Purohit, goes to the bride's house and takes her from there. A club of a tree is set up and is usually made of *Minusops hexandra*. A party then proceeds to the house of a washerman and obtains from him a framework made of bamboo or sticks, over which cotton threads are wound, (called Thornam) and an idol of Ganga, in exchange of some food and gingelly oil.

Then the washerman who brings the thornam, is asked to tie it to the pandal where the marriage ceremony takes place. The Reddiars then get the Tali from a Goldsmith and 13 marriage pots from the potter. The pots are placed in a room along with the Ganga idol and the contracting couple are seated with the ends of their clothes tied together. Then, on the marriage dais the *kankanam* (a sacred thread smeared in turmeric paste) is tied around the wrist of the boy and the girl. The bridegroom stands facing the girl in whose neck, he ties the *tali.* Then they gaze at the pole star (Arunthathi)[40].

Among the Kammalas, child marriage is not permitted. Widow remarriage is not banned. At the wedding of a widow, the *tali* (Bottu) is tied at night. Prior to the marriage ceremony, they worship the female ancestors. Kammalas adopt Brahminical gotras. Five sections among them have five gotras, each of which has twenty five sub-gotras. In their marriage, they imitate the Brahminical ceremonies. Even among the Kammalas, the dowry system prevails as it is in other communities. The impact of Anti-Dowri Act is yet to be watched.

Among the Scheduled Caste, marriage formalities are very simple. Marriages are generally arranged by parents. By exchange of clothes, rice and vegetables between the families of the bride and the groom, marriage is fixed. The marriage ceremony is very simple, nothing but only tying the tali around the neck of the girl, by the bridegroom in the presence of a Valluvan, who blesses the couple.

Among the Pallars, betrothal is ratified by the boy's tying the tali, around the neck of the girl proposed for him.

Among Christians, marriages are generally arranged by the parents. The marriage is solemnised in a church, following usual procedures prescribed by the church. Even here, the bridegroom ties the *tali.* The ceremony ends with the priest invoking the blessings of God on the newly wedded couple, followed by the holy sacrament.

Marriages among the Muslims are as simple as that of the Christians. Bridegroom and bride are the parties of the marriage which takes the form of a contract. The marriage is preceded by the betrothal in the bride's house when certain terms and conditions as to the place and time of the marriage is agreed to and the *Mahar* (bride price) is fixed. Then, the marriage ceremony commences in the bride's house usually. The bridegroom goes in procession to the mosque, offers prayers and returns to the bride's house, where she is decorated and kept in a separate room. Then, the groom is seated on a decorated dais. The local priest chants the verses from the Holy Kuran. Then, two witnesses (*i.e.,* Vakils) are sent to know the willingness of the bride. The contract is then signed by the bridegroom, bride and two witnesses in the Marriage Register, maintained by the Mosque. The ceremony ends with the prayer. (Fathiha) followed by a feast.

Dowry system

Dowry system is prevalent among almost all sections of the society. The differences may be in quantum. The amount varies depending on the status, education, and occupation of the bridegroom. The bride is always at the paying end. Dowry is paid either in cash or/and jewellery. The Dowry Prohibition Act, 1961 though prevents the demand of dowry, it could not completely eradicate the evil. There are also cases of dowry deaths, generally caused by the in-laws. Normally, parents of the bride are prepared to pay any amount of dowry to suit their purse, sometimes even beyond it, to get a good match for their daughter. The evil surfaces only when it leads to criminal acts, which result in deterrent punishment.

It is not also uncommon, at present, to come across cases of some principled bridegrooms, in almost all communities, who do not demand dowry, at all.

Civil marriages

In this rural based district, marriages are generally performed, according to the customs of their respective religion. Inter-caste and Inter-religious marriages are not many but only sporadic and occasional. The Special Marriage Act, 1954, permits marriage between a boy and a girl irrespective of their religion, but with certain conditions regarding age, soundness of mind, eligibility, etc., under this Act. Such marriages in this district are very few.

Divorce

Marriage, for Hindus, is a sacred bond and hence, they desist from breaking it. But, the modern day pressure and tension and several other factors cause a break even in the smoothly run families resulting in difference of opinion between spouses. When they reach the optimum point of 'no compromise', they have to part company, for which the Hindu Marriage Act, 1955 makes some provisions. It permits divorce under certain circumstances. Though divorce is not common among all sections of the society, it is not uncommon among the people of the lower socio-economic strata; even among the middle class and upper middle class, a few such cases occur.

Widow remarriage

Widow remarriage is not common in the district. It depends upon the caste custom and individual's thinking. Generally, a widow of a higher strata of society does not like to get married for a second time. However, society has progressed to think in terms of remarriage to a widow who is young and childless. For her future security, such an arrangement is considered indispensable. Hence, sporadic occurrences of widow remarriage are witnessed. But, among the lower strata of the society and among some castes which are not against widow remarriage, widows enter into family life for a second time as a matter of course. In a changing society, these things

have become necessity, especially from the point of view of security, among other things.

Women and economic dependence

In this rural based district, women are given honourable position in the society. They generally remain at home and look after domestic duties. They tend to aid their husbands in the farm activities, if they belong to agricultural families. They fall under the non-earning category, being dependents of the male family members. Others, who work as agricultural labourers, are earning dependents. They have no gainful employment. A few women have entered government service as teachers, doctors, nurses, clerks, officers, etc., while a few have entered even the private sector institutions.

In many middle class and poor families, the income derived from the wages of women supplements the income of the family. In many families, all the able members of the family have to work to eke out their livelihood.

Prostitution, drinking, gambling

Though prohibited by law, this age old trade is considered a source of income for some women, who find it easy to earn this way. Like in other parts of the State, in this district too, this profession is an offence and is enforced through the Suppression of Immoval Traffic Act, 1950. Crime records show, especially in the urban area, a few cases of arrest for prostitution. Those women who are forced to engage in this profession are rescued by Governmental as well as non-Governmental agencies and provided rehabilitation, shelter and training to enable them to lead a moral life.

Drinking of alcoholic liquor is permitted through licence. Partial prohibition is in force. Shops are run by authorised licensees to sell Indian Made Foreign Liquor. Country arrack shops have been closed, yet, the drinking evil continues to haunt the lower class people who spend most of their income on liquor.

Gambling, which is banned by the Tamil Nadu Gambling Act do not generally exist, under the constant fear of punishment. However, a few sporadic cases of gambling in the district, are not ruled out. Those, who are caught red-handed for gambling, are punished under the Act.

Dwelling, furniture and decoration

It seems, as evidenced by the land records pertaining to Chengalpattu district of the 15th Century that many villages had a number of temples, each indicating a boundary line on each side of the village. For example, in Mangadu village of Poonamallee Seemai (Taluk) in Chengalpattu district, it is mentioned as under :

"In the middle of the village Kamachi Amman Temple. In the North Vaikunda Perumal Temple. In the West Pillaiar Temple. In the South Pidari Temple and Palandeeswarar Temple, and In the East Kailasanathar Temple".

Each of the temple was allotted some lands for their maintenance and for the maintenance of the men who served the temples. The household of the village consisted of people belonging to various castes, each one of them forming a separate block, living in streets earmarked for them. The Palm Leaf Records of the district detail the list of castes in each village. According to them, these villages had castes such as households of Brahmins - Merchant Brahmin's house Vishnu Brahmin's house. Brahmin Philosopher's house, Telugu Brahmin's house, Saiva Brahmin's house, Tuluva Vellalar's house, Reddiar's house, Palle's house, Pandaram's house, Sathamian's house, Accountant's house, Komutti Chetti's house, Chetti's house, Edayar's house, Sanan's house, Oilmonger's house, Leaf Merchant's house, Carpenter's house, Goldsmith's house, Blacksmith's house, Sculptor's house, Ironsmith's house, Potter's house, Barber's house, Sculptor's house, Dhobi's house, Labbai's house, Muslim's house, Pariah's house, Cobbler's house, Weaver's house, Prostitute's house, Vellala's house, etc. The records thus prove that in a village set up, several caste system existed with sub-sects among each of the caste and the classification was, as apparent, based on the occupation in which a community was engaged. It is interesting to note that prostitution had also been enlisted as a profession in this village census. These records speak to the extent of the house sites of the various categories of people[41].

The location and pattern of the houses are the same as they are found in other districts of the State. The houses, in villages, are generally built in streets, each of the community being separated and identified by the streets. The members of the scheduled caste live a distance apart from the houses of the people of other classes. The houses of the poor are thatched. Persons who can afford to spend, construct terraced and bungalow type buildings. In towns, storeyed buildings have sprung up. Affluent people spend a lot, on their houses, some of which are very big in size. They are built using modern building materials which present a pompous look. In villages, however, majority of the houses are simple with thatched roofs and mud walls. Even here, rich people live in beautiful and big houses. The poor sections of the people live in huts which are of short unplastered mud walls on three sides and an entrance and thatched roof above. Census records go to show that fróm cooking to bedding, everything is to be accomplished within this single roomed hut. A few huts may have an extra space in front or rear which may, in majority of the cases, be used as stable for cattle. The huts are usually clustered. A cluster of huts is generally termed a *cherry* (சேரி) which situates far away from habitations of other communities.

New buildings of modern style are cropping up recently. The new houses are of varied patterns. The windows are of different designs. Modern

conveniences have become necessary adjuncts to such houses. The dull exterior of old type is replaced by an attractive facade.

With regard to furniture, all the houses are furnished as per requirements and as suited to the purses of the individual. Essential utensils cots, benches and chairs complete the furniture of a middle class man. People in higher echelons furnish their houses with luxurious materials. Stainless steel utensils are widely used in all households. Village people use mud pots even today.

Dress, ornaments and food habits

The people of the district are simple in their dress habits. But, it may vary from person to person depending upon the economic status. Occupation is another factor which determines the mode of the dress. The villagers prefer to use cotton dhoties and shirts but the shirt materials of today are of polyster cloth, which, though may not be cheap, has become the habit of the people. Men wear dhoti tucked up along the loins. They put on over the shoulder, a towel which is also used as a headgear when they work on the field. Only a few working class women do not wear blouses, but the rest normally wear blouses along with sarees which are made of cotton only. Generally, the women's dress consists of a saree, wound round the waist with one end hanging down in folds, while the other end is drawn up over the breast and passing over the shoulder and drawn across the back and tucked in the waist. School and college going girls wear modern dresses which are found to be very convenient. Not only the office goers but even those who live in town, a good number of them, wear pants and shirts in European style. In dressing among the male, there is no marked difference, as they wear either dhoti and shirt or pant and shirt.

Ornaments

The common and usual ornaments of women are a pair of ear studs called *kammals,* bangles - either gold, glass, plastic or gold plates - worn on the wrist, ear and neck. Married Hindu women wear compulsorily, the *tali.* Wearing of ornaments made of gold is the desire of even an ordinary woman. During marriages and other ceremonies, women wear all the available golden ornaments. As thieving is fast spreading and waylaying and threat to life, for the sake of gold, the cost of which has been on the rise, is on the increase, women are of late, afraid of wearing these ornaments. But, to exhibit a bare neck is not liked by any woman, they wear gold plated ornaments. The male members do not wear, normally, any ornaments. Wearing gold chain around the neck by a few, is not uncommon.

Food

The staple food of the people of the district is rice. Apart from this, the labouring class take other millets like cumbu, ragi, milo, etc. Majority of the people excepting the Brahmins and Vellalars, take non-vegetarian foods.

The normal custom of the people is to take two meals a day, *viz.*, lunch and supper, and breakfast in the morning. Their breakfast consists of Iddly, dosa, etc. The poor sections take porridge along with pickles as breakfast. Lunch is served with hot rice and curry, sambar, (vegetable gravy) and butter milk. Night food is usually light consisting of cooked rice with some left overs of the noon food.

Festivals and amusements

The Hindu Community observes a variety of festivals many of which are common to all castes. The most important among them are Deepavali, Saraswathi Pooja, Ayudha Pooja, Sankaranthi, Pongal and the Tamil New Year Day which falls in the middle of April. Saraswathi Pooja is celebrated in October and is dedicated to Goddess Saraswathi who is the Goddess of learning. On this day, Hindus worship books and the succeeding day is celebrated as Ayudha Pooja, when instruments are cleansed and worshipped, and dedicated to Goddess Lakshmi who is the Goddess of wealth. Deepavali is celebrated all over the country. On the Deepavali day, people take oil bath with gingelly oil and celebrate it by bursting crackers. Pongal is a unique festival for Tamil Nadu, being celebrated at the time of harvest of paddy as a means of thanking God for offering good yield. Then, the cattle are washed, along with the ploughing implements, their horns painted, and they are worshipped. This is called *Mattu Pongal* (Pongal for Cattle). Other festivals which are celebrated by many people are Shri Rama Navami (in April), Gayathri Jabam, Shri Krishna Jayanthi, Vinayaga Chathurthi, (all in August) Vaikuntha Ekadasi (in December), and Mahasivarathri (in March). Karthigai Deepam in the Tamil month of Karthikai (November-December) is celebrated, by Tamils by lighting many lamps in front of the house. Thai Poosam and Adi Kirithigai festivals for Lord Muruga at Tiruttani and Thirupporur are celebrated in the Tamil months of Thai and Adi respectively, in a grand scale. Besides these, there are several festivals for local deities which the people of the area celebrate with great enthusiasm and fanfare.

Folk arts and dances

People of the district play a variety of indigenous games which are common to people of all communities. The boys and girls play the blind man's buff, (tossing up and catching tamarind seeds) *tip-cat* and rounders, kite flying, cricket, etc. Boys in the urban areas play games like foot-ball, cricket, volley ball, etc. The girls play *Kolattam* and dancing of various kinds. The women do not, as a habit, engage themselves in any sporting activities, but some of them play games with cowries, on a board, and the like. Rural men take part in club play. The villagers, as a part-time during agricultural off seasons, take pleasure in dramatic performances conducted by the local companies. The theme of the drama may vary from Ramayana and Mahabharatha to the modern stories. The women do not take part in acting, but, they are simply spectators. Even among men, only the younger ones

COMMUNAL LIFE

Pilgrim centres

The district has several famous pilgrim centres which attract many pilgrims from all over the country. Kancheepuram, Tiruttani, Thirukazhukundram, Thiruneermalai, Thiruverkadu, Thirumullaivayal, Sriperumpudur and Mangadu, are some of the pilgrim centres where thousands of people gather every day and on festive days this number multiplies. Detailed notes on each of these places, can be seen in the chapter on *Places of Interest.*

Impact of abolition of zamindari system in the district

In pursuance of the Tamil Nadu Estates Abolition Act, 1948, 551 estates covering an area of 1015.17 sq.miles were abolished in Chengalpattu-MGR District and ryotwari settlement was introduced in the estate area. After survey, ryotwari pattas were issued to all the ryots in respect of the lands held by them which infused in the ryots, a sense of security. The lands held by the ryots were recorded in public accounts, noting their survey numbers, correct area and assessment.

The Estate Abolition Act has exercised an influence over the economic and social conditions of the ryots. As they became the owners of the land, the ryots worked wholeheartedly and improved their economic conditions along with their lands. The irrigation sources of the estates, which were neglected by the landholders, were repaired by the Public Works Department and other agencies and improved. Minor irrigation schemes were taken up to extend the irrigation facilities. Boundary disputes were arrested owing to the survey of lands and demarcation of boundaries followed by assignment of lands wherever necessary, and grant of pattas, in all cases. After the introduction of Ryotwari System, ryots were able to secure loans and enjoy other facilities under New Delhi Subsidy Scheme, etc. The abolition of Zamindari System resulted in the improvement of soil and increase in food production. More details about the abolition of this system and subsequent developments can be seen in the chapter on *Revenue Administration.*

Changing social pattern

The district is marked with several social changes and the view of the Society has also on the same line, changed radically over the past few decades. Communication facilities, transport improvement, development of Science and Technology have made men closer and knowledgeable. Narrow mindedness, superstitious beliefs, customs and functions are gradually vanishing. Number of educated people has increased, resulting in social awakening. Women's education enabled them to work for their livelihood and become solely independent. Several industries have sprung up in the district, providing employment opportunities for many. Growth of industries and their

supporting units resulted in urbanization which in turn is responsible for the development of many towns and cities. All these have paved away for the economic development of not only the district but its people as well.

The rural folks are exposed to town life and they learn all the modern developments. Better roads and transport facilities bring the rural people in frequent contact with the urban which in several ways work out for the well being of the former. Central and State governments have introduced several welfare measures to benefit the poor, very particularly, the rural poor, like *Jawahar Velai Vaippu Thittam*, the *Chief Minister's Nutritious Noon Meal Programme*, etc. Drinking water facilities, provision of radio and television in the villages, public libraries, parks, etc., are a boon to the villages each of which has atleast an Elementary School. Education, communication and transport, etc., facilities have increased the social intercourse among the village people and between rural and urban people. Thus, the social pattern of the district has undergone a variety of changes.

Important personalities of the district

Chengalpattu-M.G.R. district has produced a book of men who are either freedom fighters, educationists, social workers, political leaders, or administrators, whose contribution to the development of the district was great. Many of them caused the district to occupy an important place in the annals of Indian History. Biographies of such personalities which are presented here would throw light on their career. Considering limitation of space, only the biography of very eminent personalities, who were the livewire of the district at one point of time or the other, are presented here. However, sacrifices made by many freedom fighters are not also forgotten and they find a place in the chapter on History in which is given a brief note on each of them.

O.V. Alagesan

Ozhalur Viswanatha Mudaliar Alagesan was born on September 6, 1911. While he was a student in Presidency College, Madras, he deserted his studies and joined the Vedaranyam Sathyagraha. He was the Vice President of the erstwhile Chengalpattu District Board from 1938 till he left it to join the Individual Satyagraha and Quit India Movement in 1941-42, got arrested, was sentenced to imprisonment for six months in 1930 and kept in Tiruchirappalli Central Jail. He courted imprisonment again in 1941 and was kept in Bellary and Alipuram Jails for 10 months. He was arrested again in 1942 and kept as detenu under Defence of India Rules in Vellore and Thanjavur Special Jails for two years and two months. He was the Secretary of the Tamil Nadu Congress Committee. He became a member of the Constituent Assembly in 1946 and later the Provisional Parliament. He was minister twice in the Government of India. Later, he became the President of Tamil Nadu Congress Committee and Ambassador, Ethiopia. He was also Member of Parliament[42].

Anna (Dr. C.N. Annadurai)

Dr. C.N. Annadurai (C.N. stands for Conjeevaram Natarajan), was endearingly called 'Anna' (elder brother). He was born on 15 September 1913 in a Hindu lower middle class family of the weaver community at Kancheepuram. His father Thiru. Natarajan was a handloom weaver. His mother was Thirumathi Bangaru Ammal whose younger sister Thirumathi Rajamani Ammal was the foster-mother of Anna. She brought him up and took up the responsibility of educating him. In 1930, while still a student, he married Rani who came from the suburb of Madras. As the couple had no offspring they adopted the four grandsons of Anna's elder sister[43].

Anna had his school education at the Pachaiyappa's High School at Kancheepuram where he completed his School Final in 1929. He had to break his studies for a while due to financial circumstances and worked as a clerk in the local Municipal Office. Later, he joined the Pachaiyappa College at Madras and passed Intermediate examination in 1931. Continuing his studies in the same College he obtained his B.A. Honours and then the M.A. degree in Economics and Politics in 1934.

After obtaining his M.A. Degree, he worked as English Assistant in Govinda Naicker School which was one of the affiliated schools of the Pachaippa's Charities, only for four months[44] and turned his interest towards journalism, Labour Union activities[45] and politics which became his principal field of interest in later life.

In his early life, he was associated with the South Indian Liberal Federation, founded in 1917 by Sir. P. Theagaraya and Dr. T.M. Nair. It was popularly known as the 'Justice Party' after the name of the Party's English daily *Justice*, of which Anna was a Sub-Editor. Prior to this, he had edited

Bala Bharathi and *Nava Yuvan* Tamil weeklies published in Madras. As an active member of the Justice Party, he was opposed to Congress Party. During this period, he lost an election to the Madras City Corporation. He, having deep interest in the welfare of the poor and the downtrodden, organised small labour unions. In this field, he was greatly influenced by two communist leaders, M. Singaravelu and C. Basudev. Thiru Basudev instilled in Anna, the need for a labour weekly. Responding to this, Anna, with very great difficulty started 'Navayugam' and revolutionised the labour field. His cartoons, editorials and views on labour problems were largely appreciated[46]. He first met the revolutionary Periar E.V. Ramaswamy in 1934 at Tiruppur, in Coimbatore District, at a Youth Conference and was attracted towards him. Anna continued to recognise Periyar as his only leader, even after parting with him in 1949 to form the Dravida Munnetra Kazhagam.

Anna courted arrest in 1938 for taking part in the first anti-Hindi Campaign and was imprisoned for four months. After release, he became the editor of *Viduthalai* under the aegis of Periyar at Erode, and was associated with the Tamil Weekly *Kudi Arasu*. In 1942, he started his own weekly, the *Dravidanadu*, at Kancheepuram, which had many readers attracted by the distinct style of Anna. In 1949, he assumed the editorship of Malai Mani, Tamil daily, started by Thiru T.M. Parthasarathy on August 10, 1949 to propagate the principles of the Dravidian Progressive Federation (DMK). He was the founder and editor of the Tamil Daily *Nam Nadu* till 24th April, 1955. As an equally good writer in English, he started an English Weekly, *Homeland*, in 1957, which was in circulation till 1st March 1967. He also edited a Tamil Weekly, *Kanchi*, till that date. In 1966, he founded another English Weekly, - *Home Rule*.

As one of the literati of Tamil Nadu, he made his mark very early, as a playwright and writer of short stories, which championed the cause of the exploited classes and had theme relating to social reform.

The Justice Party, which had been confined to a small class, got a mass base due to the relentless efforts of Anna and Periyar. They infused the party with radical ideas. Their efforts bore fruit at the confederation of the Party held at Salem in 1944, when the Party was rechristened as Dravida Kazhagam (Dravidian Federation). At the same time, it dropped its Pro-British attitude. These changes attracted the student community and soon the party had a wider following particularly the youth.

The split came in September 1949, when the followers of Anna in the Dravidar Kazhagam started the Dravida Munnetra Kazhagam (Dravidian Progressive Federation) under Anna's leadership. Anna assumed the post of General Secretary of the D.M.K. keeping the post of President vacant for Periyar E.V.R. to occupy it as and when he desired so. In 1957, the D.M.K. secured 15 seats in the Madras Legislative Assembly. His speeches in Rajya Sabha were appreciated by almost all the members of the House. In a sublime,

he spoke in the Rajya Sabha against the imposition of Hindi as the sole official language of the Union. In 1965, he led the Anti-Hindi agitation in Madras.

Anna was a member of the Madras Legislative Assembly from 1957-1962 when he was elected from the Kancheepuram Assembly Constituency but was defeated in 1962 Assembly Elections by Thiru Natesa Mudaliar, a Transport Operator, at the Kancheepuram Legislative Assembly Constituency, albeit the DMK showed improvement by capturing 51 Assembly seats. He became a Member of the Rajya Sabha for 1962-1967 and in 1967, though he was elected to the Lok Sabha from South Madras Parliamentary Constituency, he had to relinquish it to be elected as a member of the Legislative Council from Madras Local Authorities Constituency in 1967, since he became the Chief Minister of Tamil Nadu after his party was voted to power in the 1967 Assembly Elections.

As Chief Minister, he grew in stature and showed great statesmanship. In a short span of two years as Chief Minister, he did much to introduce reforms in Tamil Nadu. Being a leader having faith in National Integration, Anna insisted that the Unity would be best preserved by granting the greatest autonomy to the States. In 1965, he toured Singapore, Malaysia, Thailand, Hongkong, Combodia and Japan and again in 1968, as Head of the Government in his capacity as Chief Minister, he visited U.S.A.

Anna was, besides being a novelist, an actor and a playwright. He had acted in several dramas, written by him. To his credit, he had several novels (both in English and Tamil) and dramas. He is noted for his fluency and alliterations.

Anna had a cancerous growth in the gullet for the treatment of which he had to go to U.S.A. again in September 1968. Though underwent two surgical operations in U.S.A. and India, he could not get cured. He breathed his last in the midnight of February 2-3, 1969. The mortal remains were laid to rest under the Marina sands where a huge memorial has been erected in his honour. The Government of Tamil Nadu have also converted his Kancheepuram residence as a Memorial.

Anna was a true patriot and had his roots deep in the land of his birth and its culture. He always dressed in simple South Indian style and was tender hearted. He was austere and quiet, but strong and dynamic when occasion demanded. He looked upon with contempt the ceremonials and superstitions but was tolerant to the views of others. Although he preached the dictum "ஒன்றே குலம் ஒருவனே தேவன்" he respected the sentiments and feelings of the patheists. A statesman and a scholar, a great litterateur and a social reformer, a mass leader and a friend of the poor, Anna, will be ever remembered, by one and all, not only in Tamil Nadu, but in India as well. It would be apt to quote the words of Dr. V.C. Kulandaisamy, the Vice-Chancellor of the Indra Gandhi National Open University, on Anna :

"He is a creative genius of world order, born to become a Shelly or a Shaw but drawn into a life of Revolt against social injustices, rejection of outworn traditions and aegation of many faiths and beliefs. In whatever he did, however, the creator in him dominated, and consequently in every area of his interest; he left behind a new order, a new system and an indelible mark of his natural predilections and potential for creative contribution"[47].

M. Bhakthavatchalam

Thiru M. Bhakthavatchalam was born on October 9, 1897 to Kanagasabapathi Mudaliar and Mallika in a tiny village called Nezerethpet situated three km. west to Poonamallee in Sriperumpudur taluk[48]. ('M' stands for Minjur, the native village of his Paternal line). As he lost his father at the age of five, he was brought up by his uncles Muthuranga Mudaliar and Evalappa Mudaliar of whom the former a veteran Congressman and a freedom fighter contributed much in shaping his nephew as a patriot and a pious Hindu. He was educated in the Christian Mission School and P.S. High School in Madras. Soon after matriculated from the P.S. High School, he joined the Presidency College in Madras in 1916 from where he passed his B.A. He lost his mother, in 1920, but sufficient encouragement came from his aunt, who persuaded him to join the Madras Law College. After obtaining his B.L. Degree, he worked as an Apprentice under Alladi Krishnaswami Iyer - the then leader of the Bar. In 1920, he married Gnanasundari, the daughter of T.V. Gopalaswamy Mudaliar, a leading freedom fighter. Then, he enrolled himself as a Vakil and later as an Advocate.

Bhakthavatchalam, who did not fail to attend any meeting of Dr. Annie Besant, was attracted by the Principles of Dr. Annie Besant, and played an active role in the Home Rule Movement. Then, he came into contact with Rajaji. He took part in the agitation against the Rowlatt Bill and joined the freedom struggle in 1921. He was elected to the erstwhile Chengalpattu District Committee (1921-22) when he was actively participating in the freedom struggle. In 1923, he attended the Indian National Congress session held at Kakinada. Being a firm follower of Mahatma Gandhi, he strongly pleaded for encouraging Khadi and Village Industries.

He was the Secretary of the Reception Committee of the Madras Session of the Congress in 1927. He strongly condemned the atrocities of the British Rule in India. In 1931, he became the Secretary of the Tamil Nadu Congress Committee. He played a leading role in the Civil Disobedience Movement and was imprisoned in 1932. He was elected as Vice-President of the Chengalpattu District Board in 1933, and to the Madras Corporation in 1936 and was soon appointed as first Deputy Mayor[49] of the Madras Corporation in 1937. He was elected as the Vice-President of the Harijan Seva Sangam in recognition of his evincing great interest in the removal of untouchability. In 1934, he became the Secretary of the Tamil Nadu Congress

Committee. In that capacity, he toured the entire Tamil Nadu, propagating the aims and objectives of his organisation. From 1938 to 1946, he was the convenor of the Madras Congress Legislative Party. During 1940-41, he was imprisoned for nine months for participating in the Individual Satyagraha Movement. He played an important role in the *Quit India Movement*, with the result, he courted arrest and later he was released in October, 1944. Then, he joined the Congress Sangam established by his uncle Muthuranga Mudaliar.

He started his parliamentary career as a Parliamentary Secretary to Thiru Gopala Reddy, the then Minister in the Rajaji cabinet in 1937 and later, he became a member of the cabinet of the Madras Province. In 1946, the Congress swept the polls in the General Elections and in the Ministry formed by T. Prakasam, Bhakthavatchalam was a member of the cabinet being assigned the portpolios of Education first and then Public Works, Major Irrigation and National Highways.

Like several other Congress candidates, Bhakthavatchalam also lost his elections in 1952. Then, he took up the editorship and management of the popular nationalist daily Bharat Devi. The experience which he gained earlier as a journalist contributing several articles to *New India* and *Common Wheel* in the thirties helped him in this pursuit. However, the Bharat Devi was later merged with the Dinamani.

Though defeated in the elections to the Assembly in 1952, Thiru. Bhakthavatchalam was elected to the Madras Legislative Council in 1953 and was made a Minister in Rajaji's cabinet. He also became a member of the Kamaraj Cabinet in 1954 which succeeded the Rajaji Cabinet. After landslide victories in the 1957 and 1962 General Elections, the Congress Party formed the Ministry under the leadership of K. Kamaraj. In both these ministries Bhakthavatchalam was a prominent member. Consequent on the resignation of Kamaraj as Chief Minister under the 'Kamaraj Plan for revitalizing Congress Party', he was elevated to the post of Chief Minister of Madras State as proposed by Thiru K. Kamaraj, which office, he continued to hold till the defeat of the Congress Party, alongwith his defeat, in the 1967 General Elections.

Thiru Bhakthavatchalam handled almost all the subjects in the State List as Minister and subsequently as Chief Minister. He was a good parliamentarian and an efficient administrator. He was responsible for establishing Coimbatore Agricultural College (Now, the Tamil Nadu Agricultural University), the premier one. The Madurai-Kamaraj University is his brain child. He was greatly responsible for introducing many improvements in the administration of the temples when Hindu Religious Endowments Department was under his charge. This great leader breathed his last on 13th February 1987 at Madras.

T.V. Kalyanasundara Mudaliar (Thiru-vi-ka)

Popularly known as Thiru-vi-ka, Kalyanasundaram, son of Vridhachala Mudaliar was born in 1883, at Tallum, in Chengalpattu District, in a low income group family belonged to Hindu Mudaliar Community. In 1912, he married Kamalambigai who passed away after six years. Since then, he stayed with his brother, devoting himself to religion, literature and politics[50].

Thiru-vi-ka had his schooling in the Aryan Primary School and the Wesley High School at Madras but did not complete his Matriculation. After associating himself with the Balasubramania Bhakta Jana Sabha, Royapettai and the Saivite Sangam, Tiruvallikeni, he worked in Spencer and Company and taught in the Adi Dravida School, Madras. In 1916, in consideration of his erudition in Tamil, the Management of the Wesley College appointed him a Lecturer. An year later, he joined the editorial staff of the Desabhaktan, a Tamil daily and the organ of the Madras Provincial Association.

The year 1917 was a turning point in his career. Influenced by B.G. Tilak, Annie Besant and S. Srinivasa Iyengar, he drifted into politics. His greatest contribution to nationalism was with Madras as the centre. His early interest was in the Home Rule League. Subsequently, he joined the Madras Provincial Association, organised by Kesava Pillai. In the Non-co-opertion Movement, he extended his support to C. Rajagopalachari (Rajaji) and organised demonstrations against the Rowlatt Act of 1919. He was elected President of the Tamil Nadu Congress Party in 1926.

His work for the development of Tamil literature and journalism is more striking and conspicuous than his contribution towards freedom struggle. A tireless scholar, he wrote and published about fifty works. Among his works, *Manidha Vazhkaiyum Gandhiyadigalum, Marxyum Gandhiyum, Pennin Perumai, Vazhkai Oli, Murugan Allathu Azhagu* and commentaries on Periapuranam and Thirukkural are outstanding. In 1920, he edited the Tamil paper 'Navasakthi'. Politics, religion and social problems glittered as the theme of his writtings[51].

Thiru-Vi-Ka had abundant faith in giving equal importance to all languages in the country and retaining all linguistic regions their political individuality. He opposed centralisation of political power at the centre. He worked for the uplift of women and founded the labour movement in 1918 in association with B.P. Wadia. A pious Hindu, he became a follower of *Ramalinga Swamigal* and led a very simple life. He was a great and well known scholar in Tamil and a leading trade unionist.

C.N. Muthuranga Mudaliar

C.N. Muthuranga Mudaliar was born in a rich Hindu family of Vellala Community at Pettai in Chengalpattu-MGR district. He had graduated from the Madras Christian College. This leading Mirasdar was a pious Vaishnavite and was inspired by the works of nationalist writers, particularly Chidambara

Bharathi, during his college days. He joined the Swarajist Party and enlisted himself subsequently as an active member of the Indian National Congress. He led the Sathyagraha Movement in Tamil Nadu and was imprisoned several times. He served as Secretary and President of the Madras Mahajana Sabha. In 1926, he was elected to the Madras Legislative Council from the Chengalpattu Constituency. In 1927, he served as the Chairman of the Reception Committee of the Indian National Congress Session, held at Madras. He was the Vice-President of the Tamil Nadu Congress Committee for a short period and he served as its President in the years 1929, 1937 and 1938. In 1946, he became a member of the Central Legislative Assembly.

Muthurangam was widely known in Tamil Nadu as an ardent patriot and an able Legislator. In support of Freedom Movement he led agitations, addressed meetings and wrote many articles. He condemned the British administration as a regime of exploitation and declared that it ruined the country economically, politically, culturally and spiritually. He appealed to the people for their unity and to assert their right of independence. He said :

> "We believe in the inalienable right of the Indian people to have freedom and enjoy the fruits. We believe India must sever the British connection and attain *Purna Swaraj* or complete Independence"[52].

According to him 'Indians should capture the legislatures, boycot the dyarchy, prevent the imposition of a federation and resort to non-co-operation and civil disobedience'.

As a social reformer, he worked to promote the welfare of the backward classes and Adi-Dravidas. He criticised the caste system and untouchability and stressed upon the necessity of improving the lot of Adi-Dravidas. He worked for the Hindu-Muslim Unity. It was his conviction that reforms, aimed at sharing political influence and power with the masses, were the only alternative for persuading the common people to take an interest in national activity.

He stood for changes in economy and education. He wanted adequate encouragement to be given to Handloom Industry and agriculture and relief to be given to the ryots in the form of the land tax reduction. A pious Hindu, he served as a trustee for several temples in Chengalpattu District. He was against the educational system copied from the West, for, he feared, that it had torn the young from the cultural moorings of the land.

Dr. Radhakrishnan (Sarvapalli)

Dr. Sarvapalli Radhakrishnan[53] was born on 5 September 1888, in Venkatapuram village in Tiruttani, in a middle class respectable Hindu Brahmin family. *Sarvapalli* denotes his family name. He was the second son of Veera Samayya, a Tahsildar in a Zamindari. He was married at the age of 18, in 1906, to Sivakamamma while still a student. The couple spent a happy life for half a century till Sivakamamma died in 1956.

Radhakrishnan, bright and brilliant, spent the first eight years of his life happily in his home town with his parents. Being an orthodox and religious, the family had imbided in him a religious mind and moulded his character in line with a true Hindu religious tradition.

Though Orthodox, Dr. Radhakrishnan's parents did not hesitate to give him the benefit of better education in institution run by Christians. So, particular they were that they sent him to Christian Missionary Schools and Colleges like the Lutheran Mission School, Tirupathi (1896-1900) Vellore College, Vellore (1900-1904) and Madras Christian College (1904-1908). Good education in these institutions made it possible for him to acquire specially occidental qualities like a sense of duty, punctuality, discipline, etc., together with the specially Oriental qualities of religiosity, calmness, patience and faith in God.

Radhakrishnan's choice of Philosophy as his subject of study was purely accidental. When he was baffled as to what particular Honours subject to choose from amongst Mathematics, Physics, Biology, Philosophy and History, he, out of curiosity, read three well known works on Philosophy and History, passed on to him by one of his cousins who had that year obtained the B.A. degree with Philosophy Honours, which decided his future course of studies. He studied Sanskrit and Hindi also, and has a good deal of interest in the traditional languages of India. He read the Vedas and the Upanishads also, with great interest.

For this illustrious and brilliant scholar who blossomed with glory and grandeur, several honours came to him. He was Lecturer in Philosophy, Presidency College, Madras, in the Madras Provincial Educational Service, after graduation, then elevated to the post of Assistant Professor of Philosophy, in the same College and he worked there for five years; then Professor of Philosophy, Mysore University from 1918 to 1921; became the King George V. Professor of Philosophy, Calcutta University (1921-31) and again (1937-1944), was the Vice-Chancellor of the Andhra University in 1931, and Spaulding Professor of Eastern Religion and Ethics, Oxford University (1932-1952) (the first Indian to be appointed so). He was the Vice-Chancellor of the Benaras Hindu University in 1942. He had held several cultural posts among which mention should be made of the following: Leader of the Indian Delegation to UNESCO many times during 1946-1950; Chairman of the University Education Commission (1948) appointed by the Government of India; Chairman of the Executive Board of UNESCO in 1948; President of UNESCO in 1952; Delegate to the P.E.N. Congress in 1959; Vice-President of International P.E.N.; Honorary Fellow of the British Academy 1962; and Representative of the Calcutta Unviersity at the Congress of Philosophy, Harward University, U.S.A., in May 1962.

He had held several political posts of which mention should be made of the Ambassador-Extra-ordinary and Minister Plenipotentiary to the USSR (1949-1952). He was elected twice as Vice-President of India (1952-1956) (1957-1962); and President of India from 1962 to 1966.

Dr. Radhakrishnan had held several Lecturerships. He was Upton Lecturer, Manchester College, Oxford; Harwell Lecturer in Comparative Religion, University of Chicago, Hibbert Lecturer, University College, London and Manchester (1929).

Several Honorary degrees were conferred upon him. He was conferred Knighthood in 1931; Honorary D.Ph. by Techeran University in 1963; Honorary D.Litt. by Tribhuvan University, Nepal, in 1963; Honorary Doctor of Law by National University of Ireland in 1964; and was awarded over one hundred degress including those from Oxford, Cambridge and Rome Universities; he was the Honorary Member of the Order of Merit; Buckingham Palace (on 12 June 1963). He also made goodwill tours to Singapore, Indonesia, Japan, China, Belgium, Poland, Czechoslovokia, the Soviet Union, Hongary and Bulgaria, African Countries like East and Central Africa, Indo-China States, China, Mongolia and Hongkong. He had paid State visits to Great Britain, Nepal, U.S.S.R. and Ireland.

Dr. Radhakrishnan's contribution to Philosophy and Literature is unparallel. He is one of the most celebrated writers of the present century. His works are many and varied on Philosophical, theological, ethical, educational, social and cultural subjects. He had contributed numerous articles to different well-known journals. "His articles are not merely outer expressions of his inner thoughts, but, what is more, infinitely more, emblems and embodiments of his very life-that merrily dance forth in the fortuitous, zig zag way of the world, removing all its obstacles in its own inner irresistible urge and bounders boldness. Hence, it is that his works, written in an incredibly simple, sublime, soft and serene way, are so very enchanting, enlivening and exhilarating to all. His philosophical writings are not ordinary scholarly dissertations, but also melodious poetical perfections of great and permanent value.

His thesis for the M.A. degree examination of the Madras University, published in 1908, as a book entitled "The Ethics of the Vedanta and its Material Presupposition" established his fame as a great philosophical writer of undoubted ability. This he did, at the age of twenty only. All his later works are landmarks in their respective fields like "The Philosophy of Rabindranath Tagore" (1918), "Idealistic View of Life" (1932) `Eastern Religious and Western Thought", "Reign of Philosophy in Contemporary Thought", "Kalki" or "The Future of Civilisation", "Indian Philosophy" (in two volumes), " My Search For Truth" (Autobiography, 1937), etc.

Being a great and dynamic personality, he was quiet in demeanour, austere in habits, unostentatious in behaviour, simple in his dress and sympathetic in his dealings. The Central refrain of his life's Music reverberates through every walk of his blessed life. He was a luminary in Philosophy, believing in one Reality, *viz.*, Spirit, a Monotheist in Religion believing in one God; an Endemonist or Perfectionist in Ethics, believing in inner perfection

as the *Summum bonum* or the highest end of life; a Socialist in politics, believing in mass or Universal uplift.

Dr. Radhakrishnan was considered as one of the greatest Philosophers of the world. In 1952, the Library of Living Philosophers, an Institute of world-wide repute, brought out a massive volume on *The Philosophy of Sarvapalli Radhakrishnan* which is not only a critical appreciation of his philosophical doctrines but proves that he is universally considered to be one among the philosophical luminaries like G.E. Moore, Bertrand Russel and Karl Jaspers about whose works too, the Library published separate volumes.

Dr. Radhakrishnan, subscribed to the theory that the highest aim of human life is to be a *Brahmachari*, a *Brahmagnani* as well as *Brahmavadin.* He has clearly asserted this view in his very first work, *The Ethics of the Vedanta and Its Material Presupposition*, published as early as 1908.

Dr. Radhakrishnan, is a versatile genius, a great scholar, a great Philosopher, a great seer, a great writer, a great orator, a great statesman, a great administrator and a great teacher, all embodied in one. September 5 of every year is being celebrated as Teachers' Day, throughout India to commemorate the birth of this Great Scholarly Statesman-Teacher.

Jawaharlal Nehru, one of the closest friends of Dr. Radhakrishnan, had said once about him :

> *"I join you in paying my tribute to our President, Dr. Radhakrishnan. He has served his country in many capacities. But above all, he is a great Teacher from whom all of us have learnt much and will continue to learn. It's India's peculiar privilege to have a great Philosopher, a great educationist and a great humanist as her President"*[54].

M.C. Rajah Rao Bahadur (1883-1943)

M.C. Rajah, a distinguished leader of the Adi Dravida Community was born in 1883 at St. Thomas Mount, to Chinna Thambi Pillai, a Manager of the Lawrence Asylum Press, Madras. After a brilliant academic career at the Wesley College and the Christian College, Madras, he joined the Teachers' College, Saidapet, as a School master in 1906. An enterprising person of varied interest, he addressed himself vigorously to the task of securing for the depressed classes an honourable status in society he took a keen interest in political and academic activities. His rise in his career was rapid. In 1917, he was nominated to the Elementary Education Committee and in 1924 to the Madras University Senate. He was appointed a member of the Chengalpattu District Elementary Education Committee, the Secondary Education Reorganisation Committee and the Advisory Committee on Education, Madras. He was the first member of the Scheduled Caste to enter the Madras Legislative Council. He emerged as an active member of the Justice Party and was elected Deputy Leader of the South Indian Liberal

Federation Constitutional Party. He served the Madras Publicity Board, Madras, Soldiers' Board, Madras, Labour Advisory Board, Communal Representation Committee, All India Public Accounts Committee, Railway Finance Committee, Standing Committee on Emigration, Advisory Committee, Simon Commission and the Indian Central Committee. He was also elected Vice-President of the Hindu Mahasabha and President of the Madras Temple Entry Sangam. At the age of 39, in 1922, he was presented with the sanad and badge of Rao Bahadur. He visited Ceylon in 1928 and England in 1929.

Rajah, as Secretary, reorganised the Adi Dravida Mahajana Sabha in 1916. He was elected President of the All India Depressed Classes Association in 1926. He strained every nerve for the upliftment of the depressed class people. To attain this end, he felt that the government should impart them free and compulsory education, provide free house and accord preferential treatment in recruitment to the public services. For he asserted,

> "In actual practice, the so called social inferiorty (of the depressed classes) is brought up as a bar and results in the anomaly of even higher qualifications being neglected to make room for social prejudice".

Rajah's fear was that complete transfer of power by Great Britain to India without providing adequate safeguards would lead to the backward classes being thrust back to their old status. He emphasized the need for setting right the social injustice done to the Indians. He insisted that social equality, social liberty and social fraternity, should be enforced among the people, who clamour for political equality, political liberty and political fraternity. This, he thought, should be achieved only through constitutional agitation to wrest political concessions from the British. He admired the parliamentary form of government and looked forward to the emergence of the closest harmony between India and Great Britain.

Being a teacher, he worked for the cause of education, writing text books for schools and Scout Movement. *The Oppressed Hindus* and *King George* were two of his best works.

From a humble beginning, M.C. Rajah rose to a high position and held several responsible posts. His unstinted hard work for the welfare of the backward classes especially the depressed, deserves to be recognised. He did not lack patriotism. His overwhelming concern for the depressed people guided his thinking of India's Independence.

C. Vijayaraghavachariar (1852-1944)

C. Vijayaraghavachariar, popularly known as Salem Vijayaraghavachariar[55], was born on 18 June 1852 in an orthodox Vaishnavite Brahmin family at Ponvilainthakalathur, in Madurantakam taluk of Chengalpattu-MGR District. He was one among the twelve children born to

Sadagopachariar, a Purohit and Kanakavalli Ammal. At a very early age, he was sent to Vedhapatasala in his village and was brought up in a tradition of memorising the Vedas. His real English education began at his twelfth year. He joined the Madras Pachaiyappa's High School in 1868 and Matriculated in 1870. In 1871, he joined the Madras Presidency College from where he graduated in 1875.

Vijayaraghavachariar was appointed a Lecturer in the Madras Presidency College in 1875. He was, later, transferred to the Government College, Mangalore, where, after three years of service, he resigned his post. Subsequently, he rejoined the Salem Municipal College as a Lecturer in English and Mathematics. After passing Law examination on private appearance, he began to practise in 1881.

As an advocate, he flourished in his profession and was a leader of the Bar at Salem. In 1882, there was a Hindu-Muslim riot at Salem in which Vijayaraghavachariar was implicated and charges were framed against him. He himself presented his case in the court and came out unscathed. By his efficiency in advocacy, he helped others who were implicated in the riot and sent to Andaman, in getting them released. He took objection to his being disqualified from the membership of the Municipal Council, Salem, of which he was a member during the period of the riot. He was not only able to get reinstated in the Council, but was also to obtain from the Secretary of State for India a sum of Rs.100/- as a nominal damage for removing him from the Municipal Council during the period of the riot.

The Salem riots of 1882 made Vijayaraghavachariar the hero overnight and aptly he was called *The Hero of Salem*, he was also called *The Lion of South India*. When the Indian National Congress was started in 1885, he was one of the special invitees. He was a close associate of A.O. Hume, the founder of the Indian National Congress. In 1887, he was one of the members of the Committee set up to draft the Constitution of the Indian National Congress. Since then, he became an ardent freedom fighter. His counsel, guidance and leadership were much sought by the Congressmen of his times. Dadabhai Naoroji, Tilak, Gokhale, Dr. Ansari, Maulana Azad, Lala Lajpat Rai, Rajaji and Motilal Nehru were all associated with him in the early activities of the Congress. In 1889, he was made a member of the Indian Congress Propaganda Committee. In that capacity, he carried the message of the Congress to the people of the country.

The climax of his political career came when, in 1920, he was elected to preside over the Indian National Congress Session at Nagpur where Mahatma Gandhiji's advocacy of *Poorna Swaraj* was accepted. With his powerful oratory, he won many wordy fights against C.R. Das and Motilal Nehru on the sanity of the Council Entry Programme drawn up by them. He was in the forefronters who opposed the Simon Commission that toured India

in 1929. He took an active part in the Committee constituted, under Motilal Nehru to frame the Constitution of India.

As for his public life, he became a member of the Salem Municipal Council in 1882. In 1885, he was elected to the Madras Legislative Council of which he was a member for six years, till 1901. In 1913, he was elected to the Imperial Legislative Council with which he was associated till 1916. He served these bodies with great efficiency and patriotism. He worked in close co-operation with many National leaders. When Lord Birkenhead, the Secretary of State for India, challenged whether Indians could draw up a Constitution of their own, Vijayaraghavachariar took up the challenge and drafted the Swaraj Constitution for India.

Vijayaraghavachariar advocated post-puberty marriage for women and also the right of the daughter to have a share in her father's property. He pleaded strongly for a change in the Hindu Law. Being a champion of the Depressed classes, he rendered great assistance to Swami Sharathananda in his work relating to Anti Untouchability League. He presided over the All India Hindu Mahasabha Session at Asoka in 1931.

Vijayaraghavachariar was one of the two Vice-Presidents of the Madras Branch of the Passive Resistance Movement, Mahatma Gandhi being its President and G. Kasturi Ranga Iyengar, Editor of *The Hindu*, being the other Vice-President. He always supported the cause of the weak and downtrodden and advocated for the cause of labour. The Anti untouchability League and the Congress Propaganda Organisation in England received liberal financial support from him.

He lived for 92 years. His long life is a period of relentless struggle against imperialism and economic and social distress. Albeit being an anti-imperialist, he had many friends among the representatives of the Imperialism in India like Governor and Viceroys, Lord Ripon, Lord Curzon, Lord Pentland, Lord and Lady Hardinge, Sir Conran Smith and Sir William Meyer, but his friendship did not stand in the way of his anti imperialist policy.

The Lion of South India breathed its last on the 19 April 1944. After his death, his valuable collections were treasured in the Memorial Library and Lecture Halls specially constructed at Salem and named after him. This is indeed a great treasure to the general public of Salem. Thus, a genious who rose in Chengalpattu-M.G.R. District blossomed and sparkled in Salem district.

Linguistic Peculiarities of Tamil in Chengalpattu-MGR District

Linguistic Peculiarities in the district

A study was conducted to find out the Linguistic peculiarities in Chengalpattu-MGR district with the help of Bharathiar University, Coimbatore. The study presented here has two sections, *viz.*, 1) the linguistic description and peculiarities found in the Tamil dialects of Chengalpattu-MGR district as well as an outline of language situation the minority languages (the languages used by less number of people) in use, and, (2) a description of the folk literary types found in the district especially with some of the social/Vocational groups concerned.

The study is based on the linguistic and folklore materials collected during the field trips and the data were elicited from the native speakers who represent various social communities such as Ayyar, Ayyangar, Naidu, Nadar, Chenguntha Muthaliar, Vanniar, Udayar, Asari, Chettiyar, Scheduled Castes, as well as sub-regions of this district such as Tiruvallur, Tiruttani, Uthiramerur, Madurantakam, Sriperumbudur, Chengalpattu, Kancheepuram, Gummidipoondi, Ponneri, and so on. A well designed socio-linguistic questionnaire which consists of questions relating to language use in various domains, attitudes towards their mother-tongue or regional language, languages known and so on, has been administered to collect data from the selected informants who represent the above said various social groups and sub-regions. The whole of the interview situation was tape-recorded. Analysis of the recorded answers was made which made the basis of the study.

The major objectives of this study is :

i) Identification and conditioning of all those linguistic peculiarities found in Chengalpattu-MGR district of Tamil speech varieties along with the over-all system of description and (ii) Identification and presentation of a brief description of folklore materials in Tamil.

However, the study also has certain minor objectives such as a brief - presentation of the minority languages (languages used by less number of speakers of this region) and their use in the region and a study of the language contact situations leading to bi/multi-lingualism (*i.e.* two or more languages in use) in practice.

Social stratification and sampling of Informants

Stratified Random Sampling method was followed and the following social parameters were taken into account to stratify the society of Chengalpattu-MGR district. They are, 1. Caste, *viz.*, Brahmin, Scheduled Caste, Vanniyar, Chettiyar, Nadar, Asari, etc. 2. Occupation, *viz.*, Agriculture, Weaving, Fishery, Pot making, Idol making, Business, Coolie and so on. 3. Age, *viz.*, young, old, etc. 4. Educational status, *viz.*, School, higher education, etc. 5. Income and 6. Sex. Along with these, points (places) for data collection were selected on the basis of the social, historical, cultural, occupational and directional importance attached to them. They are Tiruvallur,

Tiruttani, Uthiramerur, Madurantakam, Sriperumbudur, Chengalpattu, Kancheepuram, Gummudipoondi, Ponneri and so on.

In order to study the language contact situations the practice of more than one languages (bi/multi-lingualism) prevailing in the district, the bilingual regions and linguistic border area, that is, the area in which two languages are used. The areas thus selected were Irusamanallur of Madurantakam Taluk (Tamil-vs-Telugu), Tiruttani (Tamil - vs - Telugu) Gummudipoondi, Ponneri (Tamil - vs - Telugu).

Due representations were given to the areas and communities selected and social parameters chosen. The urban as well as rural places were equally considered for field work and data collection. The so-called highmid and low social stratifications were also given due significance in sampling the population for the survey.

About language situation

The district is a multilingual one with high percentage of bilingualism. This is of high percentage in the linguistic border areas, namely, Tamil-Telugu border areas of the district *viz.*, Tiruttani, Gummudipoondi, Ponneri and so on.

There are minority languages in use, such as Telugu, Gujarathi, Urdu, Kannada, Tulu, Malayalam, etc., in most of the urban areas, Tamil - Telugu bilingual situation prevails in areas such as Pooneri, Tiruttani, Gummidipoondi, Irusamanallur, Baburayanpet and so on. Similarly Tamil-Urdu bilingual situation is attested in places like Sriperumbudur, Madurantakam, Chengalpattu, Tiruvallur, Uthiramerur, etc.

In the formal domains of use, Tamil occupies the maximum use. Among the minority languages, only Telugu and Urdu are used as languages of education, especially, teaching as second language at the school level. That is, mostly in all the taluk headquarters the provision of learning Urdu through mosque is available. Even some private schools also offer Urdu language and Telugu language in Sriperumbudur. Sanskrit is taught and learnt in Uthiramerur and Kancheepuram.

Practice of folk literature and media

The practice of folk media is a common phenomenon found among the rural masses. The folk literary varieties are used by such people at their work place or at the home or during their leisure time, preferably in the evenings and that too after supper. This type of practice is common among the people of lower social stratum. Folk songs and folk arts like *Ku:ttu, Karakattam, Oyilattam and Kummi* are quite commonly found during festival times. This practice among the people has taken into account the modern social problems and advancement also as their subject matter. We find in radio, television, drama and in modern literature such social problems are being discussed

and picturised. For example, programmes such as those meant for agriculturists, women, youth, children, rural masses, etc., broadcasted through radio, or telecasted through T.V. employ such folk literary types and arts for effective propagation and for achieving in implementation.

The present day social complexities have to be solved through language use also. So, the effective language use can be easily drawn from literature or folk arts. This is the reality we find today.

Chengalpattu-MGR District Tamil Speech Variety

The Tamil speech currently in use in the district is being spoken by a number of speech communities. These speech varieties are characterised by the social parameters, such as caste, literary level, income group and so on. In this way, we have speech varieties such as Chettiyar variety, Mudaliyar variety, etc., and the overall system is referred to as Chengalpattu-MGR district Tamil speech or Tamil dialect. It is found that there are several varieties in this speech variety namely fishermen variety, illiterate's variety, Brahmin variety, etc.The common core and the peculiar features of each level of language such as,

1. phonological level (sound level); 2. grammatical level; and, 3. Lexical level (work level) have been presented under the respective caption.

What is presented here is : i. A common core or over all system of Chengalpattu-MGR District Tamil speech, and ii. Those linguistic peculiarities identified from the speech patterns of different social groups.

All the identified structural formations have been presented here with due illustrations.

Common core (over all system)

Phonological Level

Segmental phoniemes

1. *Vowel*

short	/i/இ e/எ a/அ o/ஒ	u/உ
long	/i/ஈ e:/ஏ.a:/ஆ O:/ஓ	u:/ஊ

2. *Consonants*

i. *Stops*

/ p(ப)	t(த)	ṭ(ட)	c(ச) k(க)/
/ b(ப)	d(த)	ḍ(ட)	j(ஜ) g(க)/

ii. *Nasals*

/ m(ம) n(ன) ṇ(ண) n(ஞ)/

iii. *Fricatives*

/S S/

ஸ் ஷ்

iv. *Laterals*

/l ḷ ḻ

ல் ள் ழ

v. *Flap*

/ ṛ /

ர்

vi. *Semi - Vowels*

/ v y /

வ் ய்

Supra Segmental Features :

Length /	:	/ (அ+அ = ஆ)	[P ^1]
Nasalisation :		/~/ பழ(ம்)	fruit

Length is a suprasegmental feature and it occurs with all vowels. Based on the contrasts the short and long vowel show, they have been treated as separate phonemes; minimum meaningful sound unit. That is why we find ten separate letters to denote the short and long vowels in Tamil. Though, this dialect has the sounds (ai) and (au), they are treated not as dipthongs but as sequence of vowels (a) and (i) in one case, and (a) and (u) in another case.

Nasalisation is also a supra segmental feature that occurs with world final vowels as their co-occurrence. It occurs with vowels /e, a:, O and u/

தலைவன்	/	talayvan	/	(t^'^ y v Ẽ)	'chief'
எல்லாம்	/	ella:m	/	(ellã :)	'all'
பழம்	/	palam	/	(P^ḻ̃))	'fruit'
வரும்	/	varum	/	(v^r̃t)	'will come'

So, the vowels take this feature and occur finally before pause. So, it cannot be treated as a separate phoneme. It can be considered as an allophone of the nasals / m / and / n /.

i. / m / -		(∩ ~)	
எல்லாம்	/ ella:m /	(ellã:)	'all'
ii. / n / -	(~^)		
அவன்	/ avan /	(A V Ẽ)	'that - he'

Marginal Phonemes :

This speech variety has five marginal stop phonemes namely (b, d, d, j and g /. These have become phonemes because of the contrasts found between the voiceless and voiced counterparts in the word initial position. The voiced stops occur word initially and medially in gemination (when two identical consonants occur together) particularly in the borrowed usages from Sanskrit, Telugu, etc., for example we find voiced sounds as follows :-

Phoneme			*Illustration*
/b/	பொட்டு	/ bottu /	marriage badge
		/ gobbi /	'a folk dance'
/d/	துட்டு	/duddu/	'coins/money' முத்த / mudda / ball of cooked rice'
/d/	டப்பு	/ dabbu /	'money' வட்டி /vaddi/ 'interests'
/j/	ஜீவிதம்	/ji:vitam/	'life' பஜ்ஜி / bajji / an eatable
/g/	கந்தம்	/gandam/	'sandal paste' குங்கிலம் / kungilam / saffron powder

Distribution of phonemes

1. Vowel distribution

phoneme (sound)	Sound occurs in the word initial position	Sound occurs in the word medial position	Sound occurs in the word final position
/ i /	/itta: ntu/ 'having put'	/kungilam/ 'saffron powder'	/kaṭa:yi/ 'an utensil'.

/ i : /	/ i:/tu/ 'pledge'	/ji:vitam/ 'life'	/ti:/ 'fire'
/ e /	/enta:nte/ 'where'	/aremani/ 'stool'	/orampare/ 'relative'
Phoneme	*Initial*	*Medial*	*Final*
/e:/	/e:na:tto:ḷu/ 'buffalo's skin'	/de:l/ 'oil'	/ja:ṭṭe:/ 'whip'
/a/	/alappay/ 'ladle'	/tolakku/ 'lamp'	/nata/ 'walk'
/a:/	/a:lu/ 'man'	/amma:nka:ran/ 'uncle'	/pa:ra:/ 'shavel'
/o/	/orampare/ 'relative'	/totta:/ 'mother's sister'	/appo/ 'then'
/o:/	/o:le/ 'letter'	/boṭṭu/ 'marriage badge'	/po:/ 'go'
/u/	/uṭu/ 'leave'	/ketunjalu/ 'an instrument used to dig and undig'\	/meṭṭu/ 'toe-ring'
/u:/	/u:ṭu/ 'house'	/tu:mpu/ 'a measurement'	/pu:/ 'flower'

2) Consonant Distribution

Stop Consonants

/p/	/panjamitti/ 'offering	/iruppam/ (with 'wish' pongal)	-
/b/	/boṭṭu/ 'marriage badge'	/gobbi/ 'a folk dance'	-
/t/	/talakko:ṭu/ 'parting on the head'	/vattuno:vu/ 'stomach ache'	-
/d/	/duḍḍu/ 'coin/money'	/mudda/ 'ball of cooked rice'	
/t/	/ṭi:/ 'tea'	/ko:ṭṭippullu/ 'a kind of grass'	-

/d/	/ḍabbu/ 'money'	/kuṇḍam/ 'fire walk'	-
/c/	/cavva:ppu/ 'child's ailment'	/coccam/ 'surplus/remainder'	-
/j/	/jaṭṭe/ 'shirt'	/bajji/ 'an eatable'	-
/k/	/kereṇam/ 'eclipse'	/toḷakku/ 'lamp'	-
/g/	/gobbi/ 'a folk dance'	/kungilam/ 'Saffron powder'	-
/m/	/meṭṭu/ 'toe-ring'	/kumpu kaṣa:yam/ 'a kind of country tonic'	/tiruva:radana/ 'worship'
/n/	/nela ma:tu/ 'ox'	/mane/ 'a small stod'	/co:men/ 'dhoti'
/n/	-	/moṇṭi/ 'lame'	-
/n/	-	/anju/ 'five'	-
Fricatives			
/s/	/sekappu/ 'red'	/pase/ 'gum'	-
/s/	-	/kaṣṭom/ 'difficulty'	-
Laterals			
/l/	/la:bam/ 'profit'	/po:slu/ 'an utensil'	/akka:ravatisal/ 'an eatable'
/l/	-	/piḷḷinka/ 'children'	-
/l̲/	-	/kal̲ippu/	-
Flap			
/r/	/roṇḍu/ 'two'	/orampare/ 'relative'	-
Semi-vowels			
/v/	/va:varaci/ 'married woman'	/cavva:ppu/ 'child's ailment'	-

/y/	/ya:ru/	/kayani/	/na:y/
	'who'	'wet land'	'dog'

Peculiarities in phonological level

The following peculiarities are found in the phonological level (including the phonetic) of the Chengalpattu-MGR District's Tamil speech :

i) Voiced stop sounds /b, d, ḍ, j and g/ become phonemes.

ii) The voiced stops occur either initially or medially (preferably in gemination).

iii) The voiced stops occur due to the adoptation of loan words from languages like Sanskrit and Telugu. The Telugu words are frequent and common because of the close contact it has with Tamil, in the border areas of this district.

iv) These are initial consonant clusters due to occurrence of borrowed features from other languages and also due to the dropping of vowels that occur in the first syllable in between the consonants of the native words.

v) Though there are supra segmental features like *length* and *Nasalisation* they are not separate phonemes because their occurrence is predictable.

vi) Fricatives /s/ and /s/ become phonemes either due to the contrast between them in borrowed usages or borrowed native usages.

vii) Due to the occurrence of initial and medial clusters, especially consonant clusters, there are new syllable patterns in this variety of Tamil. This is a phenomenon found in modern spoken Tamil.

viii) Though normally /t/ cannot occur in the word initial position due to loan words found in this speech variety we find an occurrence of /ṭ/ and /ḍ/ initially in words such as /ṭi:/ 'tea' and /dabbu/ 'money'.

ix) The number of phonemes especially consonants are higher in number because of the marginal phonemes added to the list of native phonemes.

Grammatical (Morphological) Description

Overall system

This chapter presents a detailed morphological description of grammatical categories such as noun, verb, adjective, adverb and particles. The overall morphological system of the Tamil dialect of the Chengalpattu-MGR District described here includes the common core found among the speech behaviour of different social groups as well as the individual variations found in those speech varieties concerned.

Common Morphological System

Noun System

Pronouns

There are two major types namely (i) personal pronouns and (ii) other pronouns. Personal pronouns include the first, second and third person pronouns and other pronouns include the interrogative, reflexive, universal, indefinite, etc. First and second person do not show gender whereas third person shows gender also.

Personal Pronouns

i) First Person

Singular

First person singular is represented by the forms <u>na:n</u> and <u>en</u>-.

1. *en-* occurs only before case markers.

(eg.)	en-e	enne	'me'
	en-ka:va;	enakka:va	'for me'

2. *na:n* occurs elsewhere

(eg)	na:n	
	na:n-a:	'is it I'
	na:n-e:	'I myself' (emph.)

ii) Plural

There are two plurals *viz. inclusive* plural and exclusive plural.

Inclusive Plural

Inclusive plural is represented by the forms.

namma . *(i)* and *nam-.*

1. *nam-* occurs ónly before case markers and it is in free variation with nammal-

(eg)	nam-ukku	'to us'
	nammaḷanṭa	'with us'

2. *namma (ḷ)* occurs elsewhere.

(eg)	namma (ḷ)	'we (incl.)'
	nammaḷ-o:te	'ours'

Exclusive plural

This category is represented by the forms *na:nka(ḷ)* and *enka(ḷ)* -

1. *enka(ḷ)* - occurs only before case markers

(eg)	enkal-ukkua	'to us'
enka(l)-anta	enkaḷanṭa	'with us'

2. *na:nka(l)* occurs elsewhere

(eg)	na:nka	'we (excl.)'
	na:nka(l)-a:	'is it we'

ii) Second person

Singular

The forms *ni:* and *on-* denote second person singular.

1. *on-* occurs only before case markers.

on-e	onne	'you' (acc.)	
on-ukku		'to you'	
ni:	occurs elsewhere		
ni:-		'you' (Sg.)	
ni:-e:	ni:ye:	'yourself'	(Emph.)

Plural

The forms *ni:nka(ḷ)* and *onka(ḷ)* denote the second person plural and honorific singular.

1. *onkaḷ-* occurs only before case markers.

(eg.) onkaḷ - a:ḷe		'by you'
onkaḷ-kku	onkaḷukku	(to you pl.)

2. *ni:nka(ḷ)* occurs elsewhere.

ni:nka-	'you'	(Pl. hon. sg.)
ni:nkal-e:	'you'	(Pl.) yourself'

iii. Third person (Demonstrative pronouns)

Third person is represented by demonstrative *viz.* (i) distant demonstrative and (ii) proximate demonstrative.

Distant Demonstrative Pronouns

This pronoun is formed by the addition of gender-number markers *-van, -vaḷ, -tu, vankaḷ* and *-tun* al to the distant demonstrative base *a-*.

a-van	'that-he'
a-va(ḷ)	'that-she'
a-tu	'that-it'
a-vanka(ḷ)	'those-they'
a-tunka(ḷ)	'those-they'(neu)

Proximate Demonstrative Pronouns

This type of pronoun is formed by adding the gender-number markers *-van, -vaḷ, -var, -vankal, -tu,* and *-tunkaḷ.* to the proximate demonstrative base *i-*.

i-van	'this-he'
i-va(ḷ)	'this-she'
i-vanka(ḷ)	'these-they'
i-tu	'this-it'
i-tunka(ḷ)	'these-they' (neu.)
i-var	'this-he' (Hon.)

Other Pronouns

1) Interrogative pronouns

Interrogative pronoun is formed by adding the gender, number markers *-van, -val, -tu, -vankal, -var, -tunkal* and *-ru* to the interrogative bases *e-* and *ya:-*.

eg.	e-van	'who (mass.)'
	e-va(ḷ)	'who (fem)'
	e-tu	'which'
	e-vanka(ḷ)	'who' (Pl.)
	e-var	'who-he' (hon.)
	e-tunka(ḷ)	'which' (pl.)
	+ya:-ru	'who' (non-neu)

+ ya: - occurs with non-neuter suffix -ru.

2) Reflexive Pronouns

The forms ta:n and ta:nka(l) denote the singular and plural reflexive pronouns respectively.

Singular

ta:n and *tan-* denote the singular pronouns.

1.	tan- occurs only before case markers.		
(eg.)	tan-e	tanne	'one-self (acc.)'
	tan-ukku	tanakku	'tanakku' 'to oneself'
2.	ta:n occurs elsewhere.		
	(eg.)	ta:n	'oneself'
		ta:ne-e:	'oneself' (emph.)

Plural

ta:nka(ḷ) and *tanka(ḷ)* - denote the plural.

1. tankal occurs before case markers.

tankg(ḷ) -aṇṭe	'with you'

2. ta:nka(ḷ) occurs elsewhere.

ta:nka(ḷ)	'themselves'
ta:nkaḷ-e:	'oneself' (emph.)

3. Universal Pronouns

Universal pronouns are formed by adding the clitic *-um* to forms like *evan, evaḷ, ya:r.*

(eg.)	evan-um	'any one'
	etu-um	'any thing'
	ya:rum	'anybody'

4. Indefinite Pronouns

The indefinite clitic *o:* is added to the forms like *evan, evaḷ, etu, ya:r,* etc.

evan-o:	'somebody' (Mas.)
evalo:	'somebody' (Fem.)
eto:	'somebody'

Gender-Number markers

There are eight sub-categories viz. (i) Masculine singular, (ii) Feminine singular, (iii) Neuter singular, (iv) Masculine honorific singular, (v) Honorific singular, (vi) Epicene plural, (vii) Neuter plural and (viii) Human plural,

These categories are formed by adding various gender-number markers to the noun-stems capable of taking gender number markers.

Masculine Singular :

There are few markers which denote masculine singular. They are *-an, -a:n, -van,* and *O. -an* occurs with noun stems of class II.

mak-an	'son'
aṇṇ-an	'elder brother'
pe:r-an	'grand son'
tiruṭ-an	'thief'

2) *-a:n* occurs with noun stems of class III

macc-a:n	'brother-in-law'
vaṇṇ-a:n	'washerman'

3) *-van* occurs with the noun stems of class III.

avan	'he'
oru-van	'one man'

4. *-Ø* occurs with the noun stems of class IV.

a:ca:ri-Ø	a:ca:ri	'goldsmith'
ceṭṭi-Ø	ceṭṭi	'male of Chettiar caste'

Feminine Singular

There are nine markers to denote feminine singular which are added to noun stems of different main classes and sub-classes.

1)	*-aḷ*		
	mak-aḷ	'daughter'	
	marumak-aḷ	'daughter-in-law'	
2)	*-i*		
	kuruṭ-i	'blind person' (female)	
	tiruṭ-i	'thief' (female)	
	ma:m-i	'aunt/mother-in-law'	
3)	*-a:tti*		
	taṭṭ-a:tti	'woman of goldsmith caste'	
	vaṇṇ-a:ṭṭi	'washer-woman'	
4)	*-acci*		
	tulukk-acci	'woman of muslim'	
5)	*-va(ḷ)*		
	a-va(ḷ)	'that-she'	
6)	*-tti*		
	oru-tti	'one lady'	
	pe-tti	'grand-daugher'	
7)	*-icci*		
	mutaliya:r-icci	'woman of mudaliyar caste'	
8)	*-vi*		
	kela-vi	'old lady'	
9)	*-atti*		
	na:su-atti	na:suvatti	'woman of barber community'

Neuter Singular

-tu is the marker that is added to the demonstrative bases (*a* and *i-*) and interrogative base *e-* to form neuter singular forms:

a-tu 'that-it'

i-tu 'this-it'

e-tu 'which'

Masculine Honorific Singular

-var and *-a:r* denote masculine honorific singular :

1. *-var* occurs after the demonstrative and interrogative bases and also after noun stems.

a-var	'that-he' (hon.)
i-var	'this-he' (hon.)
e-var	'who-he' (hon.)
talai-var	'leader' (hon. mas.)

2. *-a:r* occurs after certain noun stems like na:ṭ-ceṭṭi- etc.

na:ṭ-a:r	'a person of Nadar community'	
cetti-a:r	cettiya:r	'a person of Chettiar community'

Honorific Singular

-vunka(ḷ) is the honorific singular that is common to both masculine and feminine genders and occurs after demonstrative bases (a̲- and i̲-) and interrogative base (*e-*).

a-vunkaḷ	'that he/she' (hon.)
i-vunkaḷ	'that he/she' (hon.)
e-vunkaḷ;	'who he/she' (hon.)

Epicene plural

-vunka (ḷ), -ma:ru, and *-aru* are the three markers that denote epicene plural *-vunga(ḷ).*

-a-vunka(ḷ)	'those-they'
i-vunka(ḷ)	'these-they'
e-vunka(ḷ)	'who-they'

-ma:ru

akka:-ma:ru	'elder sisters'
paṭṭi-ma:ru	'grand-mothers'

-aru

paray-aru	'persons of drummer caste'
eṭay-aru	'herdsmen'

Human plural

This type of plural marker occurs after certain noun stems and after gender-number markers.

-unkaḷ and *-nkaḷ* are the two markers that denote this kind of plural.

na:ta:ṛ -unkaḷ	'people of nadar community'
palli -nka(ḷ)	'people of vanniya community'

Neuter Plural

-tunka(ḷ) -nka(ḷ) and *-ka(ḷ)* are the three markers which denote neuter plural.

The marker -tunka(ḷ) occurs after the demonstrative and interrogative bases a-, i- and e- respectively.

-tunka(ḷ)

a-tunka(ḷ)	'those - they'	(neu)
e-tunka(ḷ)	'which - they'	(neu)
i-tunka(ḷ)	'those-they'	(neu)

-ka(ḷ)

maram-ka(ḷ)	'trees'
paḷam-ka(ḷ)	'fruits'

-nka(ḷ) occurs elsewhere

seti-nka(ḷ)	'plants'
u:tu-nka(ḷ)	'houses'

Case markers

There are eight cases other than the nominative and vocative cases. Case markers are found to occur sometimes after the inflexional increments also.

Accusative case

There is only one marker *-e* to denote the accusative case

-e

en-e - enne	'me'	
maram-t-e	maraṭṭe	'tree' (acc-)

u:ṭu-t-e	u:tte	'house'	(acc)
katti-e	kattiye	'knife'	(acc)
at-e		'that'	(acc)

Instrumental case

-a:le is the marker that denotes instrumental case.

-a:le

avan-a:le	'by him'
ya:r-a:le	'by whom'
katti-a:le	kattiya:le 'by knife'
kay-a:le	kayya:le 'by hand'

Sociative case

-O:ṭe and *-ku:ṭe* are the sociative case markers added to the noun stems.

1. *-ku:ṭe* occurs after the human nouns and it is free variation with *-o:te.*

avaḷ -o:ṭe		'with her'	
avaḷ	-ku:ṭe	aveku:te	'with her'

2. -o:ṭe occurs elsewhere.

ma:ṭ-	t-o:ṭe	ma:tto:te	'with the cow'
katti-	o:te	kattiyo:te	'with the knife'
en-	o:te	enno:ṭ e	'with me'

Dative case

There are three markers *viz.,* -kku, -akku and -ukku.

-akku occurs after en-, un- tan- and nam-,

eg.

en-akku	'to me'
un-akku	'to you' (sg.)
tan-akku	'to myself'
nam-akku	'to us'

-kku occurs after stems ending in vowels.

/i/ or /e/ and consonant /y/

kiḷi-kku	'to parrot'
ve:le-kku	'to work'
na:y-kku	'to dog'

-ukku occurs elsewhere.

u:ṭṭ-ukku	'to house'
avan-ukku	'to him'
enkaḷ-ukku	'to us'

Ablative case

-aṇteruntu and *-leruntu* denote the ablative of motion.

-aṇṭeuntu occurs with nouns denoting human.

avan-aṇteruntu	'from him'	
aṇṇen-aṇteruntu	'from elder brother'	

-leruntu occurs elsewhere.

maram-t-leruntu	marattuleruntu	'from the tree'
u:ṭṭ:leruntu	'from the house'	

Locative case

-ante and -le. -ante occurs after human nouns.

avan-aṇṭe	'with him'	
ra-masa:mi -aṇṭe	'with Ramaswamy'	

-le occurs elsewhere.

u:rle -	u:rule	'in village'
vi:ṭṭ-le		'in the house'

Genitive case

Genitive is usually expressed in this dialect by *-O* and very rarely by -o:ṭe. That is the noun + noun construction itself expresses the sensitive relationship.

v- ∅

eg.	Jayakar-u:ṭu	'Jayagar's house'	
	enka-u:ṭu	'Our house'	
-o:ṭe	occurs elsewhere.		
	avaḷ-o:ṭe	u:ṭu	'her house'
	en-o:ṭe	enno:ṭe	'my'

Purposive Case

-kka:va is used as purposive case markers

avan-kka:va	avanukka:va	'for him'
atu-kka:va		'for that'

Derivation of certain grammatical forms from nouns

Certain forms are derived by adding markers to a noun based like adjectives, adverbs, possessive nouns, common nouns, etc. Those suffixes added to derive such categories are called *derivative markers.*

Adjective marker :

-a:na is the derivative marker added to certain nouns like *alaku, ne:rmay, uyaram,* etc.

e.g.	alaku - a:na	a̱laka:na	'beautiful'
	ne:rmay - a:na		'faithful'
	uyaram - a:na		'tall'
	kuttai - a:na	Kuṭṭaya:na	'short'

Adverbial marker

-a: is the derivative marker added to certain noun bases to form adverb.

oynk-a:	'regularly'
kaṭaci-a:	'lastly'
pucc-a:	'newly'

ne:r-a: 'straight'

Common Noun Marker

-i is the marker added to certain nouns like *pa:vam, va:pa:ram, vivasa:yam,* etc., to form common human nouns, which do not distinguish gender.

-i

pa:vam-i	pa:vi	'sinner'
ya:pa:ram-i	ya:ba:ri	'merchant'
vivasa:yam-i	vivasa:yi	'farmer'

Possessive Noun Markers

Markers like -sa:li, -ka:r- are added to certain noun stems to form possessive nouns.

i) *-sa:li*

putti-sa:li	'clever person'	
baḷam-sa:li	baḷasa:li	'strong person'

ii) -ka:r-

ve:le-ka:r-an	ve:lakka:ran	'servant'

Numerals

There are two types of numerals *viz.,* (1) cordinals (2) ordinals

onnu occurs before ≠≠≠

onnu	≠≠≠	'one'
patin-onnu	≠≠≠	'eleven'

ov occurs before oru and onnu

ov-oru —	ovvoru	'each one'
ov-onnu —	ovvonnu	'each one'

o:r - occurs before vowels

o:r-a:ḷu 'one person'

oru - occurs before consonants

oru co:men 'one dhoti'

oru tolakku 'one lamp'

otte - occurs elsewhere.

otte - 'one' (single thing)

Two

Numeral 'two is denoted by the forms iru-, rontu, era and ratte

1. era - occurs before close juncture / + / and word beginning with n-
2. iru - occurs before -patu.

irupatu 'twenty'

3. ratte - occurs as free form.

raṭṭe 'double'

4. roṇṭu - occurs elsewhere.

roṇṭu mane 'two small stool'

roṇṭu meṭṭu 'two toe-ring'

Three :

Numeral 'three' is represented by forms mu:nu, mu:-, mup-, mum- and mun-.

1. mup occurs before the numeral form patu-.

mup-patu 'thirty'

2. mun occurs before the numeral form nu:ru.

mun-nu:ru 'three hundred'

3. mu:- occurs before the numeral form a:yiram.

mu:a:yiram 'three thousand'

4. mum occurs before mu:nu.

mum -mu:nu 'by threes'

5. mu:nu - occurs elsewhere.

mu:nu ≠≠≠	'three'
irupattu - mu:nu	'twenty three'
mu:nu alappay	'three ladlers'

Four

Numeral 'four is denoted by the forms na:lu, na:p, na: and nav-.

1. na:p - occurs before the numeral form -patu.

na:p-patu	'forty'

2. na: - occurs before the numeral form nu:ru-

na:nu:ru	'four hundred'

3. nav - occurs before the numeral form na:lu-

nav-na:lu -	nava:lu	'my fours'

4. na:lu - occurs elsewhere.

na:lu	'four'	
patin-na:lu —	patina:lu	'fourteen'
na:lu o:le —	four letters	

Five

Numeral 'five' is denoted by the forms anju-, am-, av- and ay-.

1. *ay-* occurs before numeral forms nu:ru and a:yiram.

ay-nu:ru	'five hundred'
ay-a:yiram	'five thousand'

2. *av-* occurs before the numeral form - anju.

av-anju	avvanju	'by fives'

3. *am-* occurs before the numeral form patu.

am-patu	ambatu	'fifty'

4. anju- occurs elsewhere.

anju ≠≠≠	'five
patin-anju	'fifteen'
anju piḻḻinka	'five children'

Six

Numeral 'six' is represented by the forms a:ru, ara-, av- and aru-.

1. *ara-* occurs before the numeral form nu:ru.

ara-nu:ru	'six hundred'

2. aru- occurs before the numeral form patu.

aru-patu—	aruvatu	'sixty'

3. av- occurs before the numeral form -a:ru.

av-a:ru	avva:ru	'by sixes'

4. a:ru - occurs elsewhere.

a:ru	'six'	
patin-a:ru	'sixteen'	
a:ru-a:yiram	'a:ra:yirom'	'six thousand'
a:ru-kaṭa-yi	'six utensils'	

Seven

The forms e:ḻ-, e:ḷu, ev- and elu denote the numeral 'seven'.

1. elu-occurs before the numeral forms patu and nu:ru,

eḷu-patu—	eluvatu	'seventy'
eḷu-nu:ru		'seven hundred'

2. e:l - occurs before the numeral form a:yiram.

e:ḷ-a:yiram		'seven thousand'

3. ev- occurs before the numeral e:lu.

ev-e:ḷu—	evve:ḷu	'by sevens'

4. e:lu - occurs elsewhere.

e:lu	'seven'
patin-e:lu	'seventeen'
e:lu co:men	'seven dhoties'

Eight :

Numeral 'eight' is represented by the forms eṭṭu, eṭṭ, ev-, and eṇ-.

1. *en-* occurs before the numeral forms patu and nu:ru.

en-patu —	embatu	'eighty'
en-nu:ru	ennu:ru	'eight hundred'

2. *ett-* occurs before the numeral form a:yiram

eṭṭ-a:yiram	'eight thousand'

3. *ev-* occurs before the numeral form eṭṭu.

ev-ettu —	evvettu	'by eights'

4. *ettu* occurs elsewhere.

eṭṭu	'eight'
patin-eṭṭu	'eighteen'
eṭṭu amma:nkaran	'eight uncles"

Nine

Numeral 'nine' is represented by the forms ompatu and tol-.

1. tol- occurs before the numeral forms nu:ru and a:yiram.

tol-nu:ru— tonnu:ru 'ninety'

tol-a:yiram 'nine thousand'

2. ompatu - occurs elsewhere.

ampatu 'nine'

patt-ompatu 'nineteen'

ompatu ormpare 'nine relatives'

Ten

The numeral 'ten' is denoted by the forms pattu, patin-, pan-, patu, nu:ru, pav- and patt-.

1. pan- occurs before the numeral form rontu.

pan-ronṭu — pannonṭu 'twelve'

2. nu:ru - occurs after the numeral forms tol- and a:yiram.

tol-nu:ru — tonnu:ru 'ninety'

3. pattu - occurs before ≠≠

pattu ≠≠ 'ten'

4. patu - occurs after the numeral forms iru-, mup-, na:p-, am-, -aru-, elu-, and en-.

iru-patu — iruvatu 'twenty'

mup-patu 'thirty'

na:ppatu 'forty'

am-pattu ampatu 'fifty'

5. -patt- occurs in between numeral forms

iru-patt-a:ru— iruvatta:ru 'twenty six'

6. patin- occurs elsewhere.

patin-mu:nu — patimu:nu 'thirteen'

patin-a:ru 'sixteen'

Hundred

Numeral 'hundred' is represented by the forms nu:ru and a:yiram.

1. a:yiram - occurs after the numeral form tol-.

toḷ -a:yiram 'nine hundred'

2. nu:ru - occurs elsewhere.

era - nu:ru 'two hundred'

nu:ru 'hundred'

Thousand

a:yiram is the form that denotes the numeral 'thousand'.

a:yiram ≠≠	'thousand'
a:yirattonnu	'thousand and one'
ront-a:yiram —	ronta:yiram 'two thousand'

Ordinals

Ordinal numbers are formed by the addition of the markers -a:vatu and -a:m to the cardinal numeral forms.

pannant-a:vatu	'twelth'
na:la:vatu	'fourth'
patt-a:m u:tu	'tenth house'

Fractions

ka:-, ara-, mukka:, arekka:-, etc., are fractions used in this dialect.

Formations

1. Cardinal number + fraction
2. The fractions may occur with certain nouns also.

1. *Cardinal number + fraction*

onnu-are —	onnare	'onre'
rontu-ka:	ronte:ka:	'two and a quarter'

Here -e:- is aerclitic that functions as a conjunctive marker. This particular marker occurs only when one conjoins a full number and a fraction as shown above.

2. *The fractions may occur with certain nouns*

ara-na:lu	'half a day'
mukka:-tu:mbu	'three quarter of a measurement'
ka:-alappay	'a quarter of a ladle'.

Verb System

This section briefly presents the verb system of the district's Tamil dialect. It deals with the formation of the various finite and non-finite verbal categories like finite verb forms, infinitive, relative participle, verbal participle, conditional, etc., that are commonly found in the speech variety of Tamil used in the above said district.

Tense markers

Past Tense Markers

Past tense markers are as follows :

-t- (-tt-, -t-, -cc-), -in- (-n-, -i-), -nt- (-nt-, -nn-, -ne-).

1. -t- (-ṭṭ-, -t-, -cc-) occurs with verb stems of the following type :

uḷu-t-a:n	'ploughed-he'	
eṭu-tt-ukkin-a:nka	'took-they'	
koṭu-tt-a:nka	kotut tan:ta	'gave-they'
po:ṭ-ṭ-ucci	'put-it'	
puṭi-cc-e	'caught-you' (sing.)	
aṭi-cc-a:nka	'beaten-they'	

2. -in- (-n-, -i-) occurs with the verb stems of following type :

o:ṭ-in-a:n	o:ṯna:n	'ran-he'
sel-n-a:		'said-she'

3. -nt- (-ṇṭ-, -nn-, -nc-) occurs elsewhere.

naṭa-nt-e:n	'walked-I'	
tiṇ-ṇṭ-a:n —	tiṇṇa:n	'ate-he'
uruḷ-ṇṭ-utu —	uruṇṭutu	'rolled-it'
sey-nt-a:nkal —	senca:nka	'did-they' (hum.)

Present Tense

Present tense is represented by the markers -(k) kr-, -r-, and -Ø- which occur after different classes of verb stems.

pera:tti-kkr-a:nka		'worship-they'
pa:ṭ-r-a:n		'sings-he'
oy-kkr-a: (I)		'works-she'
po:k-Ø-utu	po:kutu	'goes-it'

Future Tense

Future tense is denoted by the markers *viz.*, -pp-, -v- and -um which occur after different sets of verb classes.

aru-pp-a:nkaḷ	'will reap-they'
tuṇṇu-v-a:n	'will eat-he'
var-um	'will come'

Pronominal Terminations

Pronominal terminations are those markers which denote the pronouns in the predicate i.e., in the finite verbs. Each pronoun has a corresponding termination in the finite verb form. For example, *pa:rtta:r-* 'say-he'.

First Person

Singular

-en is the termination for singular

eṭ(u)-pp-en 'will take-I'

va:ḷ-v-en	'will live-I'	
pa:r-tt-en	pa:tte:n	'saw-I'

Plural

First person plural termination is represented by the marker -om.

va-nt-om	'came-we'
oḷ-cc-om	'worked-we'
po:r-om	'go-we'
eṭu-pp-om	'will take-we'

Second Person

1. Singular

e and -i are the two markers that represent second person singular.

ke:lṭ-e —	ke:ṭṭe	'asked-you' (sg.)
va:ḷ-v-e		'will live-you' (sg.)
po:-r-e		'go-you' (sg.)
pa:r-tt-i-a:—	pa:ttia:	'did you (sg.) see?'

2. Plural Hon. Singular

-inka(l) is the marker that denotes second person plural/Hon. singular termination.

eṭu-pp-inka(ḷ)		'will take-you' (Hon. Sg.)
pa:r-tt-iṇka(ḷ) —	pa:ttiṇkaḷ	'saw-you' (Hon. Sg.)

Third Person

1. Masculine Singular

-a:n is the marker that denotes masculine singular termination.

tuṇṇu-v-a:n		'will eat-he'
paṭi-pp-a:n		'will read-he'
pa:r-tt-a:n —	pa:tta:n	'saw-he'
po:-r-a:n		'goes-he'

2. Feminine Singular

-a: (ḷ) is the marker that represents feminine singular termination.

paṭi-tt-a:(l) —	paṭicca:(ḷ)	'studied-she'
varama:ṭṭ-a:(ḷ)		'would not come-she'
va:ḷ-r-a:(ḷ)	'lives-she'	
oy-kkr-ra:(ḷ)	'works-she'	

3. Neuter Singular

-i-, -utu, -Ø-, -icci are the three markers that represent nueter singular termination.

paṭi-kk-i	'reads-it'	
-utu		
oy-kkr-utu —	oykkutu	'works-it'
o:t-Ø-utu —	o:tutu	'it runs'
-Ø		
var-um-Ø —	varum	'it will come'
naṭakk-um-Ø —	natakkum	'it will walk'
-i/ucci		
po:ṭṭucci	'it went'	

4. Epicene Plural

-a:nka(l) is the marker that deviates epicene plural termination.

aru-pp-a:nka(l)	'will reap-they'
tunn-a:nka(ḷ)	'ate-they'
oy-kkr-a:nka(ḷ)	'work-they'
kotu-tt-a:nka(ḷ)	'gave-they'

5. Neuter Plural

-utuka(l) is the marker that denotes neuter plural termination.

pon-utuka(ḷ)	'went-they'	
pa:r-k-utuka(ḷ)	pakkutuka(l)	'see-they'
var-Ø-utuka(ḷ)	varutuka	'come-they'

Imperative

Imperative singular is unmarked. Imperative plural is represented by the markers -nka, i:nka and -unka added after the verb stems.

-nka occurs after the verb stems ending with vowels.

po:-nka	'go-you(pl.)
va:-nka	'come-you'(pl.)

-i:nka occurs after the negative marker -a:t-.

var-a:ṭ-i:nka	'do not come-you' (pl.)

-unka occurs elsewhere.

o:ṭ-unka	'run-you' (pl.)
pa:ṭ-unka	'sing-you' (pl.)

Infinitive :

Infinitive is represented by the markers -ka, kka and -a.

1. -ka occurs after verbs like po:. oli, etc.

po:-ka	'to go'
oḷi-ka	'to get destroyed'

2. -kka occurs after the strong verbs.

kuṭi-kka	'to drink'
paṭu-kka	'to sleep'

-a occurs elsewhere.

sel-a —	sella	'to say'
o:ṭ-a		'to run'
pe:s-a		'to speak'

Negative Formation

1. Negative

Negative is denoted by two markers namely -a:- and -a:t-.

-a:- occurs only before consonants.

mel-a:-me —	mella:me 'without chewing'	
a:t-a:tu —		'does not play-it'
o:ṭ-a:tu —		'does not run-it'

-a:t- occurs elsewhere

sey-a:t-a	'do not do' (adj.)

2. Negative Past Negative

Past Negative is formed by adding the negative form -le to the infinitive form of the verb.

Verb base + -le.

a:ka-le	'did not get ready'
vara-le	'did not come'

3. Negative

-ma:ṭṭ- is the negative form that is added to the infinitive form of the verb that precedes. It gives the meaning 'won't'.

sella-ma:ṭṭ-a:	'she won't tell'
vara-ma:ṭṭ-en	'I won't come'
kutikka-ma:ṭṭ-e	'you won't drink'
po:va-ma:ṭṭ-a:nka	'they won't go'

Relative Participle

Relative participle is morphologically expressed by adding the marker -a after the tense or negative markers preceded by the verb bases.

Vb + | Tense / Negative |	+	R.P. Suffix
oy-kkr-a	'working' (adj.)	
va:ḷ-r-a	'living' (adj.)	
sonna-ve:le	'the work said by some one'	
pa-tt-a a:lu	'the person who was seen'	

Verbal Participle

Verbal participle is represented by the markers -u, -me and in some cases it is unmarked (after the past tense suffix -in-).

ke:ṭṭ-u	'having asked'
eṭu-tt-u	'having taken'
pa:tt-u	'having seen'
var-a:-me	'without coming'

Verbal participle is immediately followed by the finite verb in a construction. Also, it is possible to have more than one V.P. in a construction.

avan pa:ttukkinu po:na:n	'he saw and went'
ava sellukkinu po:na:	'she said and went'

Participial Noun

Participial noun is formed by adding the pronouns avan, ava(ḷ), avar, atu and avanka (ḷ) to the relative participle forms.

PN = RPE + | avan, avar, avanka(ḷ) / ava(ḷ), atu, |

+ — the marker 'ukkinnu' freely varies with -u 'ke:ṭṭu'.

e.g.

oykkirava	'she who works'
pa:ttavan	'he who saw'
o:ṭnatu	'that it ran'
paticcavaru	'he who read'
po:navanka(ḷ)	'they who went', etc.

Verbal Noun :

Verbal noun is denoted by the marker -atu and it is added after the tense (past or present) or negative marker when preceded by the verb stems.

VN = V.St. + | Tense / Negative Marker | + V.N. Marker

1. -atu

e.g.

van-atu	'the act of coming'
sellr-atu	'the act of telling'
po:v-a:t-atu	'the act of not going', etc.

Permissive

-ala:m is the permissive marker which occurs after the verb stems.

e.g.

pa:kk-ala:m	'one may see'
irukk-ala:m	'one may stay'
var-ala:m	'one may come', etc.

Hortative

Hortative is denoted by the marker -attum added to verb bases.

-aṭṭum

e.g.

atikk-aṭṭum	'let one beat'
veṭṭ-aṭṭum	'let one cut'
tuṇṇ-aṭṭum	'let one eat', etc.

Conditional

Conditional is represented by the markers = a:kee, -a:nkana:tti, and -a:. These markers occur after the past tense and negative markers respectively.

-a:

senn-a:	'if (some one) tells'
vant-a:	'if (some one) comes'

-a:kke

pa:tta:-kke	'if (some one) sees'
po:na:kke	'if (some one) goes'

-a:nkana:ṭṭi

koṭutta:nkana:ṭṭi	'if (some one (pol)) gives' etc.

Temporal

Temporal is represented by the marker -appo, which occurs after the tense markers (past and present) or negative markers.

-appo

e.g.

oykkira-appo	'while one works'
kuntun-appo	'while one sat'
po:r-appo	'while one goes'

Prohibitive

-ku:ta:tu is the form that is added to the infinitive of the verb to express prohibitive sense.

sella-ku:ṭa:tu	'(one) should not tell'
urikka-ku:ṭa:tu	'(one) should not peel', etc.

Obligative

vo:num is the shortened form of the ventum which is added to the infinitive form of the verb to express obligative meaning, and it is in free variation with -num.

e.g.

toratta-vo:num	'must chase'
kaḷva-num	'must wash', etc.

Potential/Negative Potential

-mulṭi- is the form added to the infinitive form of the verb to express potential or negative potential sense. This form is either followed by the marker -um or a:tu.

e.g.

naṭakka-muṭiyum	'can walk'
naṭakka-muṭiya:tu	'cannot walk'
oyakka-muṭiyum	'can work'
oyakka-muṭiya:tu	'cannot work' etc.,

Reflexive

There are four forms viz., -kkiṇ-, -ki, -ku and -ko which are added to the verbal participle of the main verb to express reflective meaning.

-kkiṇ-

eṭuttu-kkiṇ-a:n	'he took for himself'

-ki

aṭicci-ki-ra:nka(ḷ)	'they beat themselves'

-ku

pa:ttu-ku-va:n	'he will look after him'

-ko

uriccu-ko	'you (yourself) neel'

Adjectives

Adjectives qualify the nouns. It is broadly classified into two types. (1) Simple Adjectives (2) Derived Adjectives.

Simple Adjective :

It includes numerals and other types of qualitative and quantitative adjectives. The quantitative adjectives can be sub-grouped into different types which denote colour, taste, etc. Quantity is being denoted by the quantitative adjectives.

i) Qualitative Adjectives

nalla	'good'
keṭṭa	'bad'
puccu	'new'

ii) Quantitative Adjectives

neriya	'much'
konjom	'little'
kammi	'little'
oru	'one'
ore:	'one', etc.

Descriptive Adjectives

periya	'big'
cinna	'small'
uppuna periya	'very big', etc.

Adjectives of Colour

karuppu	'black'
sevappu	'red'
veḷḷe	'white'
manja	'yellow'
ni:ḷa	'blue', etc.

Demonstrative Adjectives

anta	'this'	(prox.)
inta	'that'	(rem.)
enta	'which'	(interr.)

Derived Adjectives

Derived adjectives are formed by adding suffixes either to nouns, pronouns or numerals.

Certain nouns like alaku 'beauty', elamai 'youngness', arumai 'rareness', palamai 'oldness', putumai 'newness' will take the suffix -a:na while they are functioning as adjectives.

i) Adjectives from noun

-a:na

e.g.

eḷamai	+	a:na	-	eḷamaya:na	'young'
arumai	+	a:na	-	arumaya:na	'rare'
paḷamai	+	a:na	-	pa<u>l</u>amaya:na	'old'
putumai	+	a:na	-	putumaya:na	'new'

pa<u>l</u>amaya:na koyil 'old temple'

ii) Noun or pronoun in genetive can also function are adjective.

en u:ṭu 'my house'

iii) Adjectives from noun through Relative participle.

pa:rtta a:ḷu 'the man who was seen'

iv) Adjectives from numerals :

paṉṉanta:vaṭu 'twelth'

roṇta:vatu 'second'

Adverbs

Adverbs qualifies the following verbs. This has also two types (i) Simple Adverb and (ii) Derived Adverb.

Simple Adverbs

Following are simple adverbs found in this speech

ve:kama:	'fastly'
metuva:	'slowly'
aṭikkaṭi	'often'
tenom	'daily'
	etc.,

Derived Adverbs :

Certain noun stems take <u>-a:</u> to form adverb. Such adverbs are called derived adverbs.

N. Stem	+	Adverb Marker
tippiya:	'properly'	
oynka:	'regularly'	
kaṭciya:	'lastly'	
nallama:tiriya:	'properly'	

1.C Particles

Free Particles

The following particles are found to occur in the common system of district's Tamil speech. Of these particles some of them occur freely in sentences, some others occur with verb, yet some others with nouns and some others with both verbs and nouns in sentences.

All those bound particles presented in this section are called clitios.

1. Still/Yet

innum is the particle that denotes the meaning 'still/yet'.

innum	'still/yet'
ava innum valle	'she has not come yet'

2. Hereafter

inimuṭṭum is the particle that represents "hereafter"

ni: inimuṭṭum	
inta: ṇṭekki vara:te	'you (Sg.) do not come here hereafter'

3. At once/Immediately

Otne is the particle that represents the meaning *at once / immediately.*

ave oṭne po: vo:ṇum	'she has to go immediately'

4. Yes/Alright

Se:ri is the particle that denotes the meaning 'Yes/alright'.

Se:ri, po:ẏtucci utu —	'alright it has gone leave it'
Se:ri, po:ren -	'Yes, I will go'.

5. Often

aṭikkaṭi is the particle that represents the meaning "often".

avan u:ḷkku atikkaṭi po:va:n - 'he goes often to his native place'

6. Again

The meaning 'again' is represented by the particles *pinniyum.*

avan pinniyum varuva:n - 'he will come again'

7. Aimlessly/without any purpose

*Summa:kkiyum** is the particle that denotes the meaning 'without any purpose'.

Summa:kkiyum vanten (I) came (here) without any purpose'.

* Summa:kkiyum freely varies with Summa:

8. Alone

taniya:/ottaya: are the particles that denotes 'alone/lovely'. Both are in free variation.

ava taniya: po:na: - 'she went alone'

ava ottaya: po:na - 'she went alone'

9. Much

'neriya' is the particle that denotes the meaning 'much / many'.

neriya pe:ru Vaccikkinu irukka:nka

- 'many people are having that one'

What

enna is the particle that represents the meaning 'what'

enna vo:num -'what do (you) want?'

ni: enna seyre? 'what are you doing?'

11. Slowly

molla is the particle that represents the meaning 'slowly'.

avan molla varra:n 'he comes slowly'

12. Newly

Pucca : is the particle that denoets the meaning 'newly'.

avan satt̤e pucca: va:nkunatu

- 'his shirt is a newly bought one'

13. Lastly

Kataciya: is the particle that denotes the meaning 'lastly'.

avan kaṭaciya: vanta:n 'he came lastly'

14. Properly

The terms, *nallama:tiri, tippiyaka: Oynka:* are the particles which denote the meaning properly. All are in free variation.

ava nallama:tiri varra: 'she comes properly'

ava oynka: varra: 'she comes properly'

ava tippiyaka: varra: 'she comes properly'

15. Quickly

Si:kkrom is the particle that denotes the meaning 'quickly'.

ava Si:kkirom po:ytuva: 'she will go quickly'

16. When (temporal)

appa is the particle that denotes the meaning. It occurs with relative participle form of the verb only.

Pa:ttappa — 'when (Someone) saw'

Vanṭappa — 'when (Someone) came'

17. Similar/As... (manner)

ma:tiri is the particle that represents the meaning 'similar' etc.

ni: Senna ma:tiri Vante 'you came as you said'

18. Through

mu:lama: is the particle that denotes the meaning 'through'.

avan mu:lama: Ke:ṭṭe:n — '(I) heard it through him'

en mu: lama: keṭaccatu — 'It has been got through me'

Bound particles

Clitics

Clitics are divided into three categories. They are: i) proclitics, (ii) post-clitics and (iii) en-clitics.

Proclitics

i) Distant demonstrative

Distant demonstrative is expressed by the form *a-*.

a-

(e.g.)	a-nta:ṇṭe	'there'
	a-vaḷa	'that much'
	a-nke	'there'
	a-ttane	'that many', etc.

ii) Proximate Demonstrative

Proximate Demonstrative is expressed by the form *i-*.

i-nta:ṇṭe	'here'	
i-vaḷa	'this much'	
i-nke	'here'	
i-ttane	'this many',	etc.

iii) Interrogative

The form *e-* expresses interrogation.

e-

e-nta:ṇṭe	'where'
e-vala	'How much'

e-ttane	'how many'
e-nke	'where', etc.

Post-clitics

i) Clitics of Place

Place is expressed by the forms *-nta:ṇṭe* and *-nke*. They are added to the pro-clitic bases referred to above.

-nta:ṇṭe

a-nta:ṇṭe	'there'
i-nta:ṇṭe	'here'
e-nta:ṇṭe	'where'

-nke

a-nke	'there'
i-nke	'here'
e-nke	'where'

ii) Clitics of Time

It is expressed by the forms *-ppo/a* and *-nnekki*. These forms are added to the pro-clitics, as mentioned above.

-ppo

(e.g.) a-ppo	'that time/then'
i-ppo	'this time/now'
e-ppo	'when'

-nnekki

(e.g.) a-nnekki	'that day'
i-nnekki	'today'
e-nnekki	'which day'

iii) Clitics of Quantity

Quantity is expressed by two forms *vala* and *-ttane*

-vaḷa

a-vaḷa	'that much'
i-vaḷa	'this much'
e-vaḷa	'how much'

-ttane

a-ttane	'that many'
i-ttane	'this many'
e-ttane	'how many'

Enclitics

i) Even

This clitic gives the meaning 'even and is shown by the form *-um.*

-um

na:n-um	'even-I'
anta:ṇṭay-um	'even there', etc.

ii) Emphasis

Emphasis is represented by the form *-ta:n* which can be added to any noun or verb or particle.

ta:n

avan-ta:n	'It is he only'
atu-ta:n	'It is that only'
appo-ta:n	'It then only'
vantu-ta:n	'having come only'

iii) Comparison

Comparison can be shown by the forms *Ka:ttiyam* and *Vita.* Both are in free variation.

ate-kaṭṭiyum	'than that'
ate-viṭa	'than that'

iv) About

The form *- patti* gives the meaning 'about' when added to a noun or pronoun declined in the accurative form.

-patti:

(e.g.) avane-patti	'about him'
ete-patti	'about what'
u:re-patti	'about the place', etc.

v) Confined to

The form *mattum* gives the meaning 'confined to' when added to a noun or verb stem or particle.

-maṭṭum

(e.g.) ava mattum	'she alone'
anta:ṇṭe mattum	"there alone'
vantatu mattum	

vi) Supposition

-umku:ṭe is the form that occurs with the conditional form of a verb and gives the meaning of supposition.

-um

Kotutta:nka:ṯṯiyumku:te	'even if one gave'
eṭutta:nka:ṯṯiyumku:ṭe	'even if one took'

vii) Universal Clitic

this form *-um* is different from the other *-um* like supposition, even, etc.

enta:nṭey-um	'every where'
eppo:t-um	'always', etc.

viii) Indefinite Clitic

-O: form shows indefiniteness

enta:nṭay - O;	'somewhere'
eppay-O;	'sometime'
eppaṭiy-O:	'somehow', etc.

ix) Interrogativae Clitic

Interrogative is shown by the form *-a:* which is added to the finite form of the verb or to a noun.

a:-

(e.g.) tuṉṉa:n-a:	'did he eat?'
avala:	'is it she?'
anta:ṉṭeya:	'is it there?'

Peculiar Vocabulary Items

Vowel

/i/	ina:m	'free
	iruppom	'desire'
/e/	eralamu:tu	
	e:na:to:lu	'Buffalo's skin'
	e:ṇi e:ṟṟom	'name of a story'
	e:ḷme	'poverty'
	e:ri	'tank'
/a/	akka:ravatical	'an eatable'
	amma:nka:ren	'mother's brother'
	aṉṯe	'side/nearness'
	aṉṉa:	'elder brother'

	aṇṇa:tte	'elder brother'
	alappe	'ladle'
	a:mble	'man'
	a:yakkaṭṭu	'endowment'
/o/	oti	'kick'
	oṭṭiya:nom	'an ornament'
	orresa:yal	'partial judgement'
	orampare	'relative'
	oruvatu	`ten'
	o:le	'letter'
/u/	u:tu vatti	'incense sticks'
	u:ṭṭa:nte	'near the house'

Consonants

paṭicca pasanka	'educated persons'
paṭiccom	'read-we'
paṭaccal	'offering'
paccele vayttiyom	'a medicinal treatment'
palinjapḷa:n	'khabadi' (game)
parise:le	'sile sree'
panjamatti	'a type of worship'
pavaḷamo:ṭirom	'coral ring'
Pa:rvai pair	'removing the hair from the leather (as/in/tannery)'
Pa:rai	'spade'
Pa:ṭṭan	'grand father'
Pa:likay	'an utensil with cover used for storing grains'
Pile	'gear'
Pinca male	'heavy rain'
Pinniyum	'again'
Pillinka	'children'
Po:slu	'an utensil'
Po:ṭṭukinu	'an utensil'
Po:valle	'did not go'
Pombḷe	'woman'
Po:nisaṭṭi	'an earthern pot'

Pucca	'newly'
Puṇikk:l	'a weaving instrument'
	/b/
bille	'an ornament'
bajane Ko:vil	'Vishnu temple'
bottu	'marriage badge'
bo:ntu Seyn caraṭa	'a kine of chain (ornament)
bramma Ka:ppu	'a ritual relatead to the pongal festival'
	/t/
tirumangalaccaratu	'marriage badge'
tiruva:ra:ta:nom	'worship'
tennanc ceṭi	'coconut tree'
taba:	'A place where mutton is sold'
talano:va	'head ache'
talekko:ṭu	'turban'
tali Koṭukkaratu	'offering a marriage badge'
ta:vu sompu	'a tumbler'
totta	'mother's younger sister'
tompakonṭu	'bamboo'
toḷakku	'to clean utensils'
toḷuva:	'mellowly'
tore	'dirt'
to:ppukkaraṇam	'sit and stand' exercise'
to:nṭi	'a small pot'
tu:mpu	'a measure'
	/d/
ḍe:l	'oil'
duḍḍu	'money'
candira pirai	'an ornament'
cavva:ppu	'a child disease'
coccom	'remainder'
co:men	'dhoti'
	/j/
jinikki	'dollar chain'
ji:vitom	'life'
ja:ṭṭe	'whip'

ja:ttra:	'journey'
Ja:sti	'much"
	/k/
Ki:ramaṇi	'a bead'
Keṭuncalu	'an instrument to level the floor'
Keraṇom	'eclipse'
Kaṭalaka:yi	'groundnut'
Kaṭa:gi	'a pan'
Kaṭṭilu	'cot;
Kammana:ṭṭi	'widower'
Kanjikuṭiccikinu	'after taking tiffin or meal'
Kanti	'except'
Kaṇe:na	'calf (buffalo)'
Kaṇma:na:	'calf (cow)'
Kalippu	'Kalittal A ritual for avoiding evil eye/sin'
Kalcavaram	
Kalmale	'hail'
Kaḷḷuprilla:	'an earthern pot used for storing dotty'
Kavale	'a vessel of shadoof'
Kavuntippa:y	'mat made of grass'
Kayani	'wet land'
Ka:ṭu veṭṭutal	'tree cutting in forest'
Ka:num ponkal	'pongal festival'
Kailu mo:tirom	'toe ring'
Koṇṭa:aṭittal	'a kind of folk dance'
Kolusu	'anklet'
Koyanta	'child'
Kotapella:	'a vessel used for storing oil'
Koṭṭipul	'a kind of game'
Ko:resa:l	'an utensil'
Kuṭipiḷḷe	'washerman'
Kuṭinka	'caste groups'
Kumpu Kasa:yom	'a medicinal extract'
Kumbiṭṭukkiṇṇu	'Saluting'
Kuntu	'sitting'
Kuṇṭom	'fireway'

Kunkum	'Kunkam'
Kungilom	'saffron powder'
Kuruvika:rankạ	'a caste name'
Kuḷume	'a big earthern pot'
Kre:s	'shaved skin'
	/g/
gera:kki	'demand'
gobbi	'a folk dance' with song
	/m/
meṭṭi	'toe-ring'
maddisom	'compromise'
madyastom	'compromise'
makar paṇom	'money paid for divorce'
majji	'hammer made of grass'
mane	'a plank to set'
mare	'tread on'
marave	'a measure'
ma:ṭṭal	'an ornament'
ma:na:to:l	'cow's leather'
ma:ntri:kom	'subsidy'
motalle	'at first
	/mo/
moṭa:	'a big pot'
monce	'a tumbler'
monti	'lameness'
muṭṭa	'completely'
mu:tta:r	'husband's elder brother'
mu:kkutti	'nose ring'
niṇtu	'stopped'
nettibillai	'an ornament worn on forehead'
netticutti	'an ornament worn on forehead'
nekles	'necklace'
nelama:ṭu	'Ox'
namukku	'for us'
namma:ḷunka	'caste people'
nayna	'father'

na:ṭṭappa:ṭṭa	'folk song'
na:nako:lu mo:tirom	'a kind of ring'
nonki	'fasting'
	/s/
selli	'having said'
sansa:	'a spoon'
sayanom	'sleeping'
Sa:nakay:	'a lamp'
sotaḷu	
suriya billai	
	/l/
laksmiboṭṭu	'marriage badge'
	/r/
ro:tane	'problem'
rompa	'very'
roṇṭu	'two'
rubbu	'grind'
	/v/
villiyar	'tribes'
ve:ṇṭakkay valayal	'a bangle like vegetables; lady's finger'
Ve:ndavaru	'known person'
vattuno:vu	'stomach pain'
vanki	'bangle'
vankimo:tirom	'ring'
vanki vaḷayal	'a kind of bangle'
vaḷayal	'bangle'
va:na:m	'don't want'
va:varaci	'married woman'
vo:ṇum	'(is) needed'

Language contact situation and the practice of languages in the district

Strictly speaking there is no mono-lingual person or region in the present day sociolinguistic context. That is, but for some of the isolated geographical areas it is very difficult to find out mono-lingual regions. In practical use of language and in the day-to-day contact among social groups of different social strata in all countries, we find contact and interaction. This contact and interaction is reflected in language use also. So, we find linguistic features freely entering into contacting languages in bi or multilingual situations. People also adopt and practise linguistic features from other languages in order to achieve their goals through communication and language use.

Due to language contact, we find difference in the maintenance of language, language identity, language choice, language shift and language loss. All these happen depending upon the type of language contact and its significance in actual use. In the Indian multilingual context, we find bi or multilingualism which is moderately high in urban and industrial areas and comparatively low in rural settings. However, even in small villages in the Indian set up we find minority language groups either living in pockets or atleast some families. This type of bi/multilingualism is considerably high or the incidence of bi/multilingualism is of high percentage in linguistic border areas. In such areas, we find 50 to 100 per cent bilingualism, depending upon the nature and significance of languages in use.

Tamil Nadu is not an exception to this type of language contact and language use situation. Similarly Chengalpattu-MGR district being an adjacent district to Andhra Pradesh, there are a number of areas which are both border areas and bilingual areas. The taluks, *viz.*, Ponneri, Ponnadipoondi, Tiruttani, etc., are all border areas where the use of Tamil-Telugu bilingualism is above 50 per cent. There are some areas, where we find total active bilingualism between Tamil and Telugu. It is a common phenomenon that the majority language of an area or the majority language that comes into contact with other languages dominates in actual use situation and influences all minority languages. But, against this phenomenon, it is also found that some of the minority languages due to this significance in use or prestige enjoyed by them found to influence the majority language even in day-to-day communication. This type of phenomenon in language use is observed in Tamil use. That is, some of the Telugu usages have come into Tamil use and got standardised replacing the Tamil features. There are features from other minority languages also. For example, lexical features from Sanskrit, English and perso-Arabic languages are also found in the day-to-day language use of Tamil speakers of Chengalpattu-MGR district. The reason is the adoptation of such loan features has become easy and efficient for communicative purposes.

Interference of Linguistic Features

Telugu features are found in Tamil use mostly in the phonological and lexical levels. The occurrence of voiced stops as phonemes, that is, the occurrence of /b, d, d, j and g/ as well as the occurrence of fricatives /s, s/ are due to the impact of Telugu and Sanskrit on Tamil Speech. Similarly several lexical usages are used as standard forms by replacing the Tamil usages.

Examples :

rubbu	'grind'
gobbi	'a folk dance' (with song)
ja:ttra:	'journey'
bajane ko:vil	'Vishnu temple'
madyastom	'compromise'
roṇṭu	'two'
cavva:ppu	'a child disease'
duddu	'money'
ma:ntri:kom	'mantra'
boṭṭu	'marriage badge'
bille	'an ornament'
po:slu	'an utensil'
kumpu kasa:yom	'a medicinal extract'
ja:ṭṭe	'whip'
brammaka:ppu	
Kungilom	'saffron powder'
ji:vitom	'life'
ro:tane	'problem'
meṭṭu	'toe-ring'
kuṇṭom	'fireway'
moṇṭi	'lameness'
tirumangalaccaratu	'marriage badge'
tiruva:ra:ta:nom	'worship'
ta:vu sompu	'a tumbler'
kaṭa:yi	'pan'
po:ni saṭṭi	'an earthern pot'
co:men	'dhoti'
coccom	'remainder'

aṇṭe	'side/nearness'
nayna	'father'
tu:mpu	'a measure'
kaṇṭi	'except'
pancamatti	'a type of worship'
pinca male	'light rain'
sadja male	'heavy rain'
kalmale	'hail'
Samsa	'a spoon'
ḍe:l	'oil'
makar panom	'money paid for divorce'
kaṇ ma:na:	'calf (cen)'
kaṇ e:na:	'calf(buffalo)'
ma:na:to:l	'cow's leather'
taba:	'Place where mutton is sold'
gera:kki	'demand'
ma:nyo:m	'subsidy'
guṇḍu	'bulkiness'
guṇḍu torikaṭṭa:n	'an ornament'

Certain observations based on language contact situation

It has been observed in the language contact situation of this district, different types of linguistic behaviours. Among the Adi-dravidas, the old people are good enough in speaking the Telugu although it is not the mother tongue of those people. On the otherhand the younger generation is not using Telugu in many contexts of their social interaction although they know a little of Telugu. This practice gradually leads to language loss. This type of attitude is prevailing in the areas like Tiruvallur, Thirupasuur, etc.

Besides, it is interesting to mention that the minority language speakers of this area are quite willing to send their children to the Tamil medium or English medium schools, notwithstanding, the facility of having education through their mother-tongue is available. The indifferences in sending their children to the school in which their language is used as the medium of instruction will also be a cause for losing their mother-tongue. This kind of linguistic behaviour is found in the areas like Nallattoor.

Because of moving to main stream of society, some people especially Telugu Brahmins have almost lost their linguistic identity. Instead, they acquired the regional Tamil and have been using the same for performing all

the formal and informal social activities. One can freely encounter this type of people in the areas like Karthikeyapuram,.etc.

It is also interesting to observe that Tamil speakers of this district, make use of the classical or standard variety of Tamil while performing dramas and folk arts. At the same time they handle the low variety of Tamil for their day-to-day linguistic behaviour. Similarly, it is worth to mention the fact that many of the Tamil speakers of this area are pretty good enough in using Telugu. At the same time their Tamil knowledge is comparatively poor. It is because of this reason, that some of the areas in which they live were earlier under the control of Andhra Pradesh. That gave them a chance to acquire Telugu. Therefore, the Telugu competence is commendable with old people only. Now the younger people are not that much exposed to Telugu.

Generally, in bi/multilingual contact situation, the process of language shift, language loss, language maintenance and linguistic convergence happen to occur. As far as the present area of study, Chengalpattu-MGR district is concerned, all the mechanisms said above (except language maintenance) are found to occur.

It is not uncommon that a minority language incorporates the features of the majority language and *vice versa*. In the discussion mentioned above some fo the features which influence the majority language have been identified and presented, *i.e.* from Telugu to Tamil. Moreover, one can freely encounter a large amount of Tamil features in the minority language(Telugu). For this purpose the Telugu of this area requires a careful linguistic analysis.

C. FOLKLORE OF CHENGALPATTU -M.G.R.DISTRICT

Folklore means people's literature, arts and practices. Though literature in the modern sense includes only written form of literature, in any society one can find oral form of literature depending upon the social life of the society. So, all societies have some form of literature which is mostly oral. There are several varieties of literature such as folk songs, folk ballads, folk tales, folk beliefs, etc. In addition to the literature of the above types there are other forms of folklore viz., folk arts, folk games, folk dance, folk drama, folk medicinal art, etc. All these literary varieties and arts are in use and practice by the common people in their respective areas.

In the Indian situation the above mentioned literature and arts are quite prevalent among the common people living in the rural areas. In India, atleast 75 per cent of the population live in rural areas. These people during their vocation time, social functions, festivals and on other social gatherings either in their houses or outside, may sing, dance, play and perform such type of arts and games.

These people believe in certain customs and habits and also follow and practise such things in their life. So, the customs, habits, beliefs and practices also form part of folklore.

The following distinct social beliefs and practices are attested in the social system of the Chengalpattu-M.G.R. District.

(i) A childless woman, it is believed, can beget one when she eats a small bit of umbilicial cord of the new born baby along with a banana.

(ii) In order to identify whether the new born baby is affected by the disease called *cavvappu,* they follow a belief according to which the urine of the cow is boiled and smeared on the body of the child. After smearing is over, the child is laid down on straw. If there is no change in the body of the child, then the child is given a bath.

(iii) There is a peculiar practice based on the social custom, namely *manjal nirattuvizha* in the seventh month of pregnancy of a woman. As a part of their celebration, they worship the Goddess *katteri.* They go to the paddy field around midnight without the notice of anybody and draw the shape of katteri. When they go there, they take with them a black saree, a black blouse, dry fish, chicken, yellow thread, kumkum and boiled eggs. They also cook food there and eat along with their relatives. They used to dig a small pit and keep the remaining food as well as yellow thread and kumkum without bringing them home. They also erase the drawn picture of the Goddess of *Kaṯṯeri* with the help of water. This is done because if anybody happens to see this type of performance, they will vomit blood and die on the spot. By performing this custom it is believed that no evil force would attack the pregnant lady. This practice seems to be a peculiar one to this area.

(iv) It is a common practice that one of the sons of the dead person would have his head tonsured on the 16th day when the last day ceremony is performed. But, in this district it is found that all those close relatives both men and the sons of the deceased would have their heads tonsured.

APPENDIX - 1

TALUKWISE POPULATION

S.no.	Taluk	Total population	Males	Females
1.	Gummidipundi	143,513	72,928	70,585
2.	Ponneri	289,130	146,285	142,845
3.	Uthukottai	128,063	64,422	63,641
4.	Tiruvallur	296,551	149,544	147,007
5.	Tiruttani	171,517	86,573	84,944
6.	Pallipattu	164,310	83,280	81,030
7.	Kancheepuram	287,450	194,662	192,788
8.	Sriperumbudur	593,385	304,098	289,287
9.	Saidapet	1,410,192	730,400	680,092
10.	Chengalpattu	505,044	257,469	247,575
11.	Uthiramerur	132,787	67,309	65,478
12.	Madurantakam	247,082	125,001,	122,081
13.	Cheyyur	184,269	92,722	91,547
		4,653,593	2,374,693	2,278,900

Talukwise - Rural-Urban Population in Chengalpattu-MGR District

S.no.	Taluk	Total	Rural	Urban
1.	Gummidipundi	143,513	139,111	4,402
2.	Ponneri	289,130	237,331	51,797
3.	Uthukottai	128,063	128,063	NIL
4.	Tiruvallur	296,551	247,188	49,363
5.	Tiruttani	171,517	137,154	34,368
6.	Pallipattu	164,310	135,255	29,055
7.	Kancheepuram	287,450	199,076	188,374
8.	Sriperumbudur	593,385	250,445	342,940
9.	Saidapet	1,410,492	177,752	1,232,740
10.	Chengalpattu	505,044	408,237	96,807
11.	Uthiramerur	132,787	111,219	21,568
12.	Madurantakam	247,082	220,135	26,947
13.	Cheyyur	184,269	174,615	9,654

APPENDIX - 2

Density of Population *

	Chengalpattu District	-	592
1.	Gummidipoondi Taluk	-	337
2.	Ponneri Taluk	-	429
3.	Uthukottai Taluk	-	353
4.	Tiruvallur Taluk	-	441
5.	Tiruttani Taluk	-	385
6.	Pallipattu Taluk	-	468
7.	Kancheepuram Taluk	-	602
8.	Sriperumbudur Taluk	-	749
9.	Saidapet Taluk	-	2592
10.	Chengalpattu Taluk	-	448
11.	Uthiramerur Taluk	-	314
12.	Madurantakam Taluk	-	339
13.	Cheyyur Taluk	-	285

* Census of India, 1991

APPENDIX - 3

Sex Ratio - Chengalpattu - MGR District *

	Chengalpattu District	-	**960**
1.	Gummidipoondi Taluk	-	968
2.	Ponneri Taluk	-	976
3.	Uthukottai Taluk	-	988
4.	Tiruvallur Taluk	-	983
5.	Tiruttani Taluk	-	981
6.	Pallipattu Taluk	-	973
7.	Kancheepuram Taluk	-	990
8.	Sriperumbudur Taluk	-	951
9.	Saidapet Taluk	-	931
10.	Chengalpattu Taluk	-	962
11.	Uthiramerur Taluk	-	973
12.	Madurantakam Taluk	-	977
13.	Cheyyur Taluk	-	987

* *Ibid.*

APPENDIX - 4

Scheduled Castes Population in Chengalpattu-MGR District

(Taluk-wise figures) *

S.no.	*Taluk*	*Persons*	*Males*	*Females*
1.	Gummidipoondi	57,872	29,321	28,551
2.	Ponneri	5,240	2,638	2,602
3.	Uthukottai	3,636	1,821	1,815
4.	Tiruvallur	5,858	2,943	2,915
5.	Tiruttani	4,742	2,404	2,338
6.	Pallipattu	4,093	2,068	2,025
7.	Kancheepuram	3,177	1,588	1,589
8.	Sriperumbudur	5,653	2,891	2,762
9.	Saidapet	6,416	3,231	3,185
10.	Chengalpattu	8,218	4,163	4,055
11.	Uthiramerur	2,090	1,064	1,026
12.	Madurantakam	3,914	1,997	1,917
13.	Cheyyur	1,715	904	811

* *Ibid.*

APPENDIX - 5

Talukwise Distribution of Scheduled Tribes in Chengalpattu-MGR District *

S.no.	Taluk	Males	Females	Total
1.	Gummidipoondi	1609	1511	3120
2.	Ponneri	2638	2602	5240
3.	Uthukottai	1821	1815	3636
4.	Tiruvallur	2943	2915	5858
5.	Tiruttani	2404	2338	4742
6.	Pallipattu	2068	2025	4093
7.	Kancheepuram	1588	1589	3177
8.	Sriperumbudur	2891	2762	5653
9.	Saidapet	3231	3185	6416
10.	Chengalpattu	4163	4055	8218
11.	Uthiramerur	1064	1026	2090
12.	Madurantakam	1997	1917	3914
13.	Cheyyur	904	811	1715
	District Total :	29321	28551	57872

* *Ibid.*

APPENDIX - 6

Table showing the Panchayat Union-wise population of the Irula Tribe in Chengalpattu-MGR District

Sl. no.	*Name of the Panchayat Union*	*Total Population*	*Scheduled Tribes Population*
1	*2*	*3*	*4*
1.	Acharapakkam Panchayat Union	91772	1249
2.	Chithanur Panchayat Union	91324	934
3.	Kattankolathur Panchayat Union	1190800	2205
4.	Lathur Panchayat Union	69000	916
5.	Madurantakam Panchayat Union	106211	1946
6.	Thirukalikundram Panchayat Union	135243	1668
7.	Thirupporur Panchayat Union	97156	988
8.	Kancheepuram Panchayat Union	95668	1558
9.	Kunnathur Panchayat Union	113983	1155
10.	Poonamallee Panchayat Union	101701	504
11.	Sriperumbudur Panchayat Union	83306	688

1	2	3	4
12.	Walajabad Panchayat Union	105004	1271
13.	Uthiramerur Panchayat Union	121802	1954
14.	Minjur Panchayat Union	145016	2232
15.	Gummidipoondi Panchayat Union	121939	2965
16.	Puzal Panchayat Union	65736	941
17.	Sholavaram Panchayat Union	86594	1304
18.	St. Thomas Mount Panchayat Union	177605	1355
19.	Villivakkam Panchayat Union	87671	333
20.	Ellapuram Panchayat Union	95674	1956
21.	Kadambathur Panchayat Union	83566	1280
22.	Pallipattu Panchayat Union	75372	4656
23.	Poondi Panchayat Union	81958	1898
24.	Ramakrishna Rajapet Panchayat Union	69861	397
25.	Tiruttani Panchayat Union	78375	2741
26.	Tiruvallur Panchayat Union	77782	704
27.	Thiruvalangadu Panchayat Union	68302	1855

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CHAPTER - 4

AGRICULTURE AND IRRIGATION

This is essentially an agricultural district. The agricultural prospects of the district depend upon the local rainfall. Paddy forms the back-bone of the district's economy. Groundnut, ragi, cumbu, sugarcane and pulses are other important crops that are grown in the district. Gingelly and chillies are also grown in certain pockets of the district[1]. The concentration in the field of agriculture is evident from the fact that 65.22 per cent main workers are engaged in agriculture and allied activities and 35.62 per cent of the geographical area is under cultivation. The availability of cultivated land per head of agricultural population is 0.40 hectare as against the state figure of 0.50 hectare[2].

The district generally, presents a flat surface and the land seldom rises to an elevation of more than 300 feet, and in many places near the coast, it sinks below the sea-level. Long reaches of blown sand, often separated from the main land by backwaters, from the chief features of the coast scenery, while inland, great expenses of flat rice plains interspersed with groves of coconut and tamarind trees in which lie the villages of ryots, and sandy or stony wastes and prairies of poor pasture land, constitute the principal varities of landscape[3]. The sandy loams form 50 per cent of the area while the clay loams, sandy soils and red soils occupy 25. 20 per cent and five per cent respectively[4].

Land use pattern

Classification of the area

The total geographical area was 7.86 lakh hectares. The area under forests was 0.43 lakh hectare. The area under barren and cultivable land, land put to non-agricultural uses and cultivable waste accounted for 4.24, 24.90 and 1.74 per cent respectively. The percentage of extent of the land under permanent pastures and other grazing lands was 3.60 per cent. Particulars on the land utilisation are tabled below[5]:

Sl.no.	*Particulars*	*Area in lakh* (hectares)	*Per cent*
1.	Geographical area	7.86	100.00
2.	Forests	0.43	5.42
3.	Barren and uncultivable land	0.33	4.24
4.	Land put to non-agricultural use	1.96	24.90
5.	Cultivable waste	0.14	1.74

6.	Permanent pastures and other grazing lands	0.28	3.60
7.	Land under miscellaneous tree crops and groves not included in the net area sown	0.31	3.89
8.	Current fallows	1.06	13.51
9.	Other fallow lands	0.25	3.20
10.	Net area sown	3.10	39.50

It may be seen therefrom that agriculture is the major occupation of the district and the gross cropped area works out to 73 per cent. The gross area irrigated is 3.38 lakh hectares.

Forests

The area under forest represented only 5.42 per cent of the total area as against the requirement of 33 per cent for a sound ecological system. Even the 5.42 per cent of the forest area does not represent the area under full green cover it includes the area under degraded forest also.

Land put to non-agricultural uses [6]

The land put to non-agricultural uses represented 24.90 per cent of the total area. This indicates that there is a heavy demand for the land in the non-agricultural sector, in view of the nearness to the Madras City and this has made steady in roads into the cultivable lands including fertile wet lands in some areas.

Cultivable waste, current fallow and other fallows

The area under cultivable waste is 0.14 lakh hectares representing 1.74 per cent of the total area. The area under current fallow and other fallows accounted for about 17 per cent of the total area.

Under the programme of the Decennial World Agricultural Census sponsored by the Food and Agricultural Organisation of the United Nations and as an integral part of the National Agricultural Census taken all over the country, the Director of Agricultural Census is carrying out Agricultural Census Operations in Tamil-Nadu with 1970-71 (Fasli 1380) as the reference year. The latest agricultural census report has been brought out in the year 1979-80. It comprises information regarding number, size, class-wise operational holdings, operated area, tenure and tenancy, irrigation source-wise, land utilisation, cropping pattern, etc.

An operational holding for the purpose of this census is defined as all lands which are used wholly or partly for agricultural production and operated as one technical unit by one person alone or with others without regard to title, legal from site or location. The actual cultivator and not the land

owner is the unit for collection of data for the census. The operational holdings have been grouped under 12 size classes, *viz.,* 0 - 0.5 to 40-50 acres and above 50 acres. The irrigation is considered to denote the practice of providing land with water other than rain by artificial means for production of crops. If the holding is operated either by one person alone, or by a group of persons, being members of the same household, the holding is said to be "individual". When two or more persons share jointly (as partners) in the economic and technical responsibility for the operation on holding, the holding is said to be a joint family. For a meaningful study of the agricultural economy at the district level, necessary statistical data in respect of the following are given in *Appendices 1 to 11*. For the purpose of comparative study, statistical data in regard to 1970-71, 1976-77 and 1979-80 are given :

i. Number of operational holding and area operated by size, class of operational holdings 1970-71; ii. Number and area of operational holdings (revised) in the district in 1976-77; iii. Percentage distribution of number and area of operational holdings revised in the district during 1976-77; iv. Interse percentage distribution of number and of Area of operational holdings (revised) in the district during 1976-77; v. Number and area of operational holdings of scheduled caste 1979-80; vi. Number and area of operational holdings of scheduled tribes 1979-80 and vii. Number and area of operational holdings (other than SC and ST) 1979-1980. Particulars regarding utilisation of land panchayat union-wise are tabled in *Appendix - 12.*

Soil

In the district, there are four major soil orders *viz.,* entisol, inceptisol, allisol and vertisol comprising red, black, river allurial and coastal allurial soils. The red soil occupies an extent of 64 per cent followed by 15 per cent of black soil and 11 per cent of river allurial. The coastal alluvial soil occupies an extent of 20 per cent.

The soils of the district are generally low in Nitrogen (N) and Pottassium (K) and medium to high in Phosphorus (P). The P and K status of soils in northern divisions of Ponneri, Saidapet, Tiruvallur and Tiruttani are better than those in Southern areas. The status of micronutrients in soils is below critical limits in respect of Zinc and Copper in 70 per cent area. Varying degrees of deficiencies of iron and manganese are also noticed in many villages. The productivity of soil is poor to average. The general causes for low productivity are mainly due to alkaline problem, impeded drainage, poor organic manure usage and highly permeable soils.

Soil Conservation

Of the many problems which man has brought on himself and is engaged in combating, that of soil conservation certainly takes a high priority both with reference to its urgency and its importance for human economy[7]. The fury of the forces of nature-torrential rains, floods, winds and the waves

of the sea combined with man's shortsighted cutting of trees, overgrazing of graze lands, insufficient drainage or improper land use, pose a continuous threat to the very base of cultivation, the source of food and the top soil of agricultural land. Cultivable soil is constantly encroached upon by one or the other of these forces which render hundreds and thousands of acres every year out of use[8].

A constant struggle is being waged against such on-slaughts of nature. Steady efforts are being made to protect and reclaim the soil which may otherwise be lost. A modest start for soil conservation work was begun in the First Five Year Plan *i.e.* mainly formation of Contour bunding on agricultural land. Subsequently, afforestation, research, training and soil survey, improvement of dry farming practice, pasture development, ravine reclamation and reclamation of saline and alkaline soil have also been laid emphasis on soil conservation programmes.

The State Agricultural Engineering Department helps the farmers in developing their lands; carrying out timely agricultural operations with improved implements; stabilising; as well as extending irrigation facilities; conserving and managing the soil and water resources; providing employment opportunities to the rural people; and rendering relief measures at times of natural calamities like flood and drought. The department has made its recent efforts in conserving energy in agricultural pumpsets and utilisation of non conventional energy sources and in the introduction of improved irrigation methods like drip irrigation and sprinkler irrigation systems.

Land Development

Land Development is one of the basic requirements for improving agriculture. The department helps the farmers in reclaiming their waste lands, undulating lands etc., by land levelling and land shaping. The Agriculture Engineering Department takes up land levelling with the help of bulldozers. Land levelling is necessary for converting dry lands into irrigable lands and for efficiently using the irrigation water. Tractors with matched implements are provided to farmers for ploughing, harrowing, puddling and for performing other agricultural operations[9].

Soil Conservation

Agricultural Engineering department has undertaken the following Soil Conservation measures on dry, garden and wet lands and for this purpose, soil conservation sub division is functioning in Kancheepuram even from the first Five Year Plan period[10].

Under dry lands measures i) Contour forming, ii) Mulching, iii) Cover crops - Legumes, iv) Strip Cropping Vetriver, v) Contour strip cropping, vi) Field strip cropping, vii) Wind strip cropping, viii) Permanent or temporary buffer strip cropping, ix) Mixed cropping, x) Watersheds, xi) Basin listing, xii) Sub soiling are undertaken.

Under garden lands measures Land levelling and Laying of pipe lines to irrigate the elevated lands are done and under wet lands, the works regarding the i) Arresting the wastage of irrigation water; ii) Implementation of farm development works under modernisation of irrigation tanks to adopt scientific methods, to improve water use efficiency and optional utilisation of available water for sustained yield and iii) Providing drainage facilities.

The total geographical area of the district was 7,85,606 hectares in 1988 and of these the area covered by cultivable waste was 13,660 hectares[11].

Under land reclamation, bulldozers are provided to farmers on hire basis to take up land levelling and land shaping in order to bring more land under cultivation and make irrigation practices efficient. A 1000 acres project had been taken up for execution of land reclamation scheme and the achievement from 1980-81 to 1987-88 are tabled below :

Year (1)	*Number of Projects* (2)	*Coverage* (3)	*Cost of Project* (Rs. in lakhs) (4)
1980-81	4	1168	7.786
1981-82	4	1685	10.590
1982-83	3	2030	10.240
1983-84	3	1494	13.760
1984-85	5	1615	14.090
1985-86	5	4193	17.120
1986-87	5	7472	19.180
1987-88	5	8224	21.29

Under the land reclamation scheme, about 900 acres of uncultivable land are converted into agricultural lands every year. Under the 1000 acres Watershed Management Programme, Contom bunding and Pipe outlet structure are carried out over an area of 1500 hectares at a cost of Rs.8,00,000/- annually. Under private tubewell scheme, about 800 bore wells are sunk and 3200 hectares of dry lands are brought under irrigation.

Reclamation of Saline and Alkaline Soils

Causes for Salinity [12]

1) Arid climate 2) Impeded drainage 3) Salt layer at lower depth 4) Excessive Irrigation 5) High level of underground water table 6) Irrigation with salty water 7) Basic nature of soil mineral 8) Hard Pan at sub surface 9) Continuous use of chemical fertilisers 10) Sea or Ocean 11) Predominency of no. in soil solution 12) Agricultural operation at sane depth.

Saline and Alkali soils

Saline Soil

Soils having Zoxic concentration of soluble salts in the root zone. The EC-(Electric Conductivity) of the soil is - 14.0 mmhos/cm. PH is - 8.5 and the Exchangeable sodium percentage (ESP) 15. The soluble salts are mainly Chlorides and Sulphates of Na, Ca, Mg and K. The concentration of the Salt in solution is — 0.1 - 0.2 per cent.

Saline - Alkaline Soils

When the soluble salts accumulates in the soil over a prolonged period, the Ca., Mg. and K. absorbed by plant and Sodium remains in the soil solution. The concentration of the Mg. further increases as $Ca^{"}$ and $Mg^{"}$ precipitated in the form of Carbonate and Sulphates, whereas Na_2 CO_3 (Sodium Carbonate) has more solubility than CA. and Mg. Carbonate, which induce soil to become Saline and Alkaline. The EC of Soil is 4.0 mmbos/cm, Ph 8.5 one) ESP is - 15 concentration of the salts in the Solution is 0.25 per cent.

Alkaline Soil[13]

In the case of alkaline soil the Sodium Carbonates is the predominant salt, the characteristics of soil are EC - 0.40 mmhos/cm. due to absence of soluble salts. PH 8.5 due to presence of Na_2 Co_3. ESP 15. Drainage and aerations are poor, physical condition of the soils are unfavourable, exchangeable Sodium adversally affect plant growth.

Reclamation

Land reclamation consists of providing proper drainage facilities, converting insoluble salts into soluble one by suitable soil amendments, adopting suitable crop rotation, growing of salt tolerant or resistant varieties, scrapping away the salt affected layer and use of organic measures.

Practical Applications

(1) The water to be applied should be tested for salinity. The land is divided into convenient plots of 1/8 to 1/12 of a hectare with bunds all round and each plot flooded to hold water up to 10 to 15 cm deep and the water allowed to drain by deep percolation and not by overwash. Drainage of the percolation water may be carried out by ditches about 1 to 1 1/3 metre deep at horizontal intervals of 30 to 60 metres. This process should be repeated generally four to six times. (2) If the soil is fairly permeable and not clayey and also contains Calcium Carbonate, green manure alone should be used instead of applying gypsum and ploughed in. (3) When gypsum is to be applied, it is spread in powdered form uniformally and ploughed with enough water to make the soil wet and mith with the manure. (4) It is better to grow saline or alkaline resistant crops like paddy (S.R. 26 B or P.V.R.1).

(Recommended application of Gypsum)

Soil pH	Gypsum in Kg. per Hectare	
8.6 - 8.9	1000	Kg./ha.
9.0	1400	"
9.1	1800	"
9.2	2200	"
9.3	2600	"
9.4	3000	"
9.5	3400	"
9.6	3800	"
9.7	4200	"
9.8	4600	"
9.9 and above	5000	"

The recommended dose of Gypsum for non-calcarious soil only. For calcarious soil organic manures are recommended[14].

A recommendation scheduled of Soil Testing Lab, Kancheepuram.

Soil Reclamation

Saline and alkaline lands can be reclaimed by the provision of efficient drainage washing down the injurious salts by irrigation with good water. In serious cases of alkalinity, the application of chemicals like gypsum and sulphur may be necessary to release the soda from the clay complex by exchange reactions and to convert the Sodium Carbonate and bicarbonate into the sulphate which is less injurious to crops and is more easily washed out of the soil.

Implementation of Saline and Alkaline Reclamation Scheme in the District

In order to increase crop production, efforts like introducing high yielding varieties, balanced fertilisation, plant protection measures and scientific farming practices and undertaken. More areas are also brought under cultivation by intensive cultivation. But still, there are lands having soil problems like alakalinity and salinity which require much attention and reclamation. In such lands productivity is low; uptake of nutrients and availability of nutrients especially micro nutrients are also low in these lands. Such lands are identified and reclaimed by means of agronomic practices or by chemical amendments.

According to the Reconnoisance soil survey, it has been estimated that about two lakh hectares are under alkalinity and one lakh hectares under salinity in Tamil Nadu. Of these problem lands, more than 30 per cent of the area occur in the Chengalpattu-MGR district. Based on the facts and severity of the problem, a Pilot Scheme for "Reclamation of Saline and Alkaline Soils" was started in the district in the year 1979 and the scheme still continues. Under this scheme, the amendment gypsum is supplied to the farmers at 50 per cent subsidised cost[15]. The objectives of the scheme are (1) To identify and characterise the occurence of problem soil causes for the development of problem soil are (i) original parent material or applied tank silt containing more sodium or calcium irons, (ii) when irrigated with saline water, (iii) due to poor drainage and (iv) faulty irrigation methods in Chengalpattu-MGR district. (2) To test the existing problem lands having poor yield and step up the food production by the application of the soil amendments, *viz.*, gypsum and iron pyrites based on soil test values; (3) Delieration of the problem areas and demarking the potential problem soils; and (4) Follow up work and extending technical guidance to the farmers who have already undertaken reclamation to sustain the productivity.

Salient features of the Scheme

Under the scheme, the soil and water samples are collected from the individual fields of farmers and tested in the laboratory and the magnitude of the problem is identified. Based on the magnitude, the requirement of gypsum is estimated and the test report along with the requirement of gypsum is intimated to the formers. The farmers are to pay 50 per cent cost of the gypsum in Agro Service Society, Kancheepuram which is a Government Agency that supplies the gypsum to the farmers. After the gypsum is supplied to the farmers, the technical officers visit the farmers field, educate them and demonstrate the method of application of gypsum to the field and the process of reclamation and after-cultivation practices. The Agro Service Society will then claim the bill for the remaining 50 per cent cost and thereafter the subsidy is released.

Salient findings of the Scheme

The soil PH is reduced continuously by the application of gypsum. The yield is increased by 30-50 per cent. The physical properties of the soil is also improved. The physical and financial achievement of the Saline and Alkaline Reclamation Scheme from 1980-81 to 1990-91 are shown in *Appendix-13.*

Watershed Management Scheme

Watershed management is one of the measure under the soil conservation scheme which aims at utilising the available natural resources in an effective manner to derive the maximum income through increased productivity. Watershed management helps to increase production; to protect

and increase the water resources on the watershed, efficient utilisation for irrigation; to reduce flood and sediment damages; it leads to improvement of the standard of living of the people in the basin

Water shed development and management in the upper reaches of catchments have many potential benefits for the individuals, community and to the society such as improved crop drainage, stability in agricultural production, reduced water logging and soil erosion. It provides opportunities for reforestation and for improvement of environment[16].

Schemes

1. Contour bunding; 2. Tractor ploughing; 3. Afforestation; 4. Gully control measures consisting of diversion drain and loose rock check dam; 5. Farm forestry; 6. Tree planting; and 7. Vegetative Control Hedges are executed under dryland measures and land levelling and well command development works are done under garden land measures.

Percolation Ponds

The percolation ponds are constructed across natural water courses, drainage pointed of watershed etc., to impound run off water and retain it for a longer period with the object of effecting percolation in the sub surface both laterally and vertically. The percolation ponds also prevent flash floods and act as silt catching unit and prevent premature silting of higher costing reservoirs and irrigationtanks. They control soil erosion; recharge groundwater and minimise silt depostion. They create employment opportunities to the agriculture labourers[17].

Farm Development Works

Majority of the holders in the command do not have direct irrigation-*cum*-drainage channels with adequate quantity of water, reaching their lands in time. Therefore, a measurable and easily manageable quantity of water, based on crop water requirement was considered for easy handling and distribution for a limited extent of 10 ha. blocks. Therefore, the micro command was subdivided into number of micro commands with an area of 10 hectares. Each Micro command is provided with an off-take point, enabling the command to receive adequate quantity of water through latenally diversion boxes and field channels. By these manageable and measurable quantity of water is allowed to be related among the micro command holders.

Nature and variety of soils and crop suitability[18]

Soil is the uppermost layer of the earth's crust which is capable of supporting plant growth and is immediately underlain by the sub-soil. It is composed of clay, silt, sand, gravel and stones in varying proportions besides organic matter and bacteria and lower forms of plants and animals. The inorganic constituents are the products of weathering of the parent rocks. Clay is composed mainly of hydrated silicates of aluminium and iron; hydrated

oxides of aluminium and iron are also present in some soil clays. Residual or sedentary soils are those formed in situ, from the disintegration and decomposition of the parent rocks. In the case of transported soils, the soil constituents are carried far away from the place of the parent rock, the transporting agency-being, wind, rain-water, etc.

Sandy soils containing less than 10 per cent of (Clay + silt) finer fractions *i.e.* less than .02 m.m. Sandy loam containing 10-20 per cent of (clay + silt) finer fractions. Loam containing 20-30 per cent of (clay + silt) finer fractions. Clay loam containing 30-50 per cent of (clay + silt) finer fractions. Clay containing more than 50 per cent of (Clay + silt) finer fractions. The term clay refers to particles below .002 m.m. silt from .002 to .02 m.m. colloids are less than .001 m.m. diameter. Calcareous soils contain over five per cent calcium carbonate, humus soils contain more than five per cent organic matter, while gravelly soils contain appreciable amount of gravel.

The soils of Tamilnadu can be broadly classfied as (1) Black cotton soils (2) Red soils (3) Laterite soils (4) Alluvial soils (5) Humus soils and (6) saline soils, Mixed or brown soils which are intermediate between black cotton soils and red soils are fairly common.

Red non-calcareous soils, black soils, alluvial soils, red calcareous soils and coastal alluival soils are the major soil types in the Chengalpattu-MGR district[19].

1. Red Non-calcareous soils

It represents 64 per cent of the total area of the district. The total extent of the soil is 3,00,329 ha. This soil type occurs in all taluks except in Kancheepuram where its occurrence is negligible. Paddy is mostly grown both under semi dry and in wet conditions. Groundnut, millets and vegetables are other crops grown in the soils.

2. Black Soils

Black soils represent 15 per cent of the total area occuring mostly in Madurantakam, Ponneri, Uthiramerur and Chengalpattu taluks and they occur in isolated patches in other taluks. The total extent of the soil is 1,05,830 ha. Paddy is grown under both wet and semi dry conditions. Sugarcane, banana, millets and pulses are other important crops grown in the soil. Finger millet (ragi crop) is widely grown.

3. Alluvial Soils

These soils represent 11 per cent of the total area of the district and predominantly occur in Kancheepura taluk. They are found in isolated patches in Chengalpattu and Ponneri taluks. They spreadover an extent of 72.571 ha; Dry and semi-dry crops such as groundnut, millets and paddy are mostly cultivated in the soils.

4. Red Calcareaous Soils

This type of soils constitute about five per cent of the total area of the district. They are present in isolated patches in Sriperumbudur, Chengalpattu, Pallipattu, Kancheepuram and Uthiramerur taluks. They spread over an area of 55,611 hectare. Paddy, ragi and other millets are grown under irrigated condition. Groundnut and semi dry paddy crops are cultivated under rainfed condition.

5. Coastal alluvial soils

They represent two per cent of the total area of the district. They form a coastal belt along Madurantakam, Chengalpattu, Saidapet and Ponneri taluks. They spread over an area of 33,984 ha. Casuarina is grown more and also a major crop in the soil. Paddy and ragi are cultivated in a smaller area where irrigation facilities are available.

6. Coastal salt affected soils

This type of soils occur in Ponneri, Saidapet, Chengalpattu and Madurantakam taluks along the coastal line to the extent of 142 kilometres. An area of 1,00,426 (approx.) salt affected soil in the district has been assessed[20].

The extent of problem soils namely alkaline soil, and saline soil is 311 ha. and 11485 ha. respectively.

The soils in the Chengalpattu-MGR district are scientifically classified as follows[21]:

	Soil Name	*Land Capability Class*
1.	Fine Loamy Udic ustochrepts	II es
2.	Fine Loamy Udic Haplustalfs	II es
3.	Coarse Loamy Fluventic Ustochrepts	III s
4.	Fine Entic Chromusterts	III s
5.	Fine loamy Typic ustochrepts	III es
6.	Typic ustipsamments	IV es
7.	Loamy skeletal Typic ustorthents	III es
8.	Fine loamy vertic ustochrepts	III es
9.	Fine loamy Udic Haplustalfs	II es
10.	Fine Udorthentic chromusterts	III s
11.	Coarse loamy skeletal plinthustalfs	IV es
12.	Fine loamy vertic Haplustalfs	II es
13.	Fine loamy Udic paleustalfs	II s
14.	Fine loamy Udic Rhodustalfs	II es

15.	Loamy skeletal Lithic Ustorthents	IV es
16.	Coarse loamy Fluventic Fragiochrepts	III s
17.	Fine loamy Plinthaqualfs	IV es
18.	Fine loam typic Haplustalfs	II es
19.	Fine loamy Oxie Paleustalfs	III s
20.	Fine loamy Aeric Haplaquepts	III s
21.	Fine loamy Rhodic Paleustalfs	II es
22.	Fine Entic Pellusterts	III s
23.	Fine loamy typic Natrudalfs	IV s
24.	Coarse loamy Typic ustifluvents	III es
25.	Fine loamy Acqic ustrochrepts	III W
26.	Fine loamy Typic Rhodustalfs	II es

Soil and Crop suitability classification[22]

Udic Ustrochrepts and Udic Haplustalfs are fine loamy soils. They are suitable for the cultivation of groundnut, millets, pulses, tapioca, horticultural crops, vegetable, grapes and coconut. Clay is moderately suited for sugarcane and banana cultivation and fairly suited for paddy cultivation.

Fluventic Ustochrepts

Which is a coarse loamy soil is highly suitable for the cultivation of coconut, banana, vegetables, pulses, groundnut, sugarcane and millets. It is moderately as well as fairly suited for paddy cultivation.

Fine Entic Chromusterts

Crops such as paddy, cotton, black gram and green gram are highly suitable crops for cultivation in the soil. Pulses, chillies, coriander, and yam are moderately suited and millets, sugarcane are fairly suited for cultivation.

Fine Loamy Typic ustochrepts

This soil is highly suitable for the cultivation of groundnut, vegetables, millets, chillies and moderately suitable for sugarcane and banana. It is fairly suitable for the cultivation of paddy and tapioca.

Typic Ustipsamments

Coconut, casurina, eucalyptus, palmyrah and cashew crops are highly suited for cultivation. Groundnut, flowers and vegetables are moderately suited.

Loamy skeletal Typic ustorthents

Pastures and forests are mainly grown in the soil. Pulses, millets, flowers, vegetables, etc., are moderately suited. Palmyrah and Eucalyptus are fairly suited crops.

Fine loamy, vertic Ustochrepts

This soil is highly suited for the cultivation of paddy, cotton and coriander, pulses, chillies, yam and banana are moderately suited, while millets, sugarcane and vegetables are fairly suited for cultivation.

Fine loamy Ultic Haplustalfs

This soil is highly suitable for the cultivation of chillies, flowers, coconut and orchard crops.

Fine Udorthentic Chromusterts

Crops such as paddy, cotton and coriander are the best suited for cultivation. Pulses, chillies, yam and banana are moderately suited while millets, sugarcane and vegetables are fairly suited for cultivation in this soil.

Coarse loamy Piliuthustalfs

This soil is highly suitable for cultivation of groundnut, pulses, casuarina, eucalyptus and vegetables. It is moderately suitable for cultivation of shallow rooted crops, sugarcane and fairly suited for paddy cultivation.

Fine loamy Vertic Haplustalfs

This soil is highly suitable for growing paddy, cotton and coriander crops. Pulses, chillies, yam and banana are moderately suited crops and sugarcane, banana and vegetables are fairly suitable crops.

Fine loamy Udic Paleustalfs

Orchard, tree crops and acid lime are highly suitable crops. Groundnut, pulses, coconut millets, vegetables, sugarcane, and banana are moderately suitable crops.

Fine loamy Udic Rhodustalfs

Groundnut, pulses, millets, sugarcane, coconut, chillies, banana, grapes, acit lime and other horticultural crops and highly suitable for cultivation. Vegetable cultivation is moderately suited while paddy is fairly suited.

Loamy skeletal Lithic ustorthents

Crops highly suitable for cultivation in the soil are groundnut, pulses and millets. It is also suitable for forest plantation, casuarina an eucalyptus are moderately suited in the soil.

Coarse loamy Fluventic Fragiochrepts

This soil is highly suitable for the cultivation for groundnut, pulses and millets. Casuarina and eucalyptus are moderately suitably crops.

Fine loamy Plinthaqualfts

This type of soil is suitable only for paddy cultivation.

Fine loamy Typic Haplustalfs

Crops such as groundnut, pulses, millets, chillies, sugarcane, banana and vegetables are highly suitable crops in the soil. Paddy is moderately suitable for cultivation.

Fine loamy Oxic Paleustalfs

Orchard, tree crops, cashew and citrus are highly suitable crops in the soil. Groundnut, pulses and vegetables are moderately suited for cultivation while paddy is fairly suited.

Fine loamy Aeric Haplaquepts

This soil is highly suited for cultivation of paddy and korai and moderately suitable for cultivation of groundnut, pulses and vegetables. It is fairly suitable for paddy cultivation.

Fine loamy Rhodic Paleustalfs

Orchard and tree crops are highly suitable for cultivation in the soil. Groundnut, pulses and vegetables are moderately suitable and paddy crop is fairly suitable for cultivation.

Fine, Entic Pellusterts

This soil is highly suitable for cultivation of paddy, cotton, chillies and coriander. Pulses and banana are moderately suitable crops while sugarcane is fairly suitable.

Fine loamy Typic Natrudalfs

This soil is highly suitable for cultivation of eucalyptus

Coarse loamy Typic ustifluvents

Groundnut, coconut, casuarina and onion are highly suitable crops while sugarcane, banana, vegetables and millets are moderately suitable crops.

Fine loamy Aquic Ustochrepts

Paddy and korai are highly suitable crops for cultivation.

Fine loamy Typic Rhodustalfs

Groundnut, pulses, chillies, millets, sugarcane, banana and vegetables are highly suited crops. Horticultural and deep rooted crops are moderately suitable crops.

Major Soil Types Identified in Chengalpattu M.G.R. District[23]

Sl.no.	Soil and group	Extent in ha.
1.	Fine loamy, Udic Ustochrepts	3,00,329
2.	Fine loamy, Udic Haplustalfs	90,635
3.	Course loamy Fluventic Ustochrepts	68,221
4.	Fine, Entic Chromusterts	58,042
5.	Fine loamy, Typic Ustochrepts	55,611

Talukwise details on the major soils types found, area and percentage are as follows:

Chengalpattu taluk

Sl.no.	Soil type	Area in ha.	Percentage
1.	Fine loamy, Udic Ustochrepts	26,640.0	31,94
2.	Loamy skeletal, Lithic Ustorthents	20,124.0	24.13
3.	Fine, Vertic Ustochrepts	14,468.4	17.35
4.	Typic Ustipsamments	8,487.6	10.18
5.	Fine loamy Fluventic Ustochrepts	7,693.2	9.22
Gummidipoondi taluk			
1.	Fine loamy Udic Ustochrepts	23,869	55.6
2.	Fine loamy Plinthustalfs	6,851	16.0
3.	Clayey loam Fluventic Ustochrepts	5,553	13.0
Kancheepuram taluk			
1.	Coarse loamy, Fluventic Ustropepts	21,775	42.73
2.	Fine loamy Typic Ustropepts	17,263	33.87
3.	Fine loamy Udic Haplustalfs.	2,496	4.9
Madurantakam and Cheyyur taluks			
1.	Fine loamy, Udic Ustochrepts	55,831.4	40.64
2.	Loamy skeletal Lithic Ustorthents	24,241.6	17.65
3.	Fine, Entic Chromusterts	15,514.2	11.29
4.	Fine loamy, Ultic Haplustalfs	15,381.4	11.20
5.	Typic Ustipsamments	7,252	5.28

Sl.no.	Soil type	Area in ha.	Percentage
Pallipattu taluk			
1.	Loamy skeletal, Lithic Usterthents	10,644.6	26.73
2.	Loamy, skeletal, Udic Ustochrepts	8,454.4	21.23
3.	Fine, Vertic Ustochrepts	6,806.4	17.09
4.	Fine loamy Udic Ustochrepts	5,625.6	14.13
5.	Fine loamy Typic Ustochrepts	2,607.2	6.55
6.	Coarse loamy Fluventic Ustochrepts	2,056.8	5.16
Ponneri taluk			
1.	Fine Entic Chromusterts	14.384.0	26.00
2.	Fine loamy Udic Ustochrepts	13,383.0	24.10
3.	Typic Ustipamments	9,416.2	17.02
4.	Fine, loamy Fluventic Ustochrepts	6,380.8	11.53
5.	Fine loamy Udic Heplustalfs	3,022.8	5.46
Saidapet taluk			
1.	Fine loamy Udic Ustochrepts	10,646	23.57
2.	Fine loamy Ulti Haplustalfs.	6,830	15.12
3.	Fine Udorthentic Cheomustarts	5,816	12.85
4.	Typic Ustipsamuments	5,324	11.79
5.	Fine loamy Udic Haplustolfs	4,412	9.77
6.	Fine Typic Ustochrepts	4,260	9.43
Sriperumbudur taluk			
1.	Fine loamy Udic Ustochrepts	18,589	26.87
2.	Fine loamy Udic Haplustalfs	18,013	26.03
3.	Loamy skeletal Udic Ustochrepts	5,959	8.61
4.	Fine Vertic Ustochrepts	5,514	7.97
5.	Fine Typic Ustochrepts	5,209	7.53
6.	Fine loamy Udic Paleustalfs	4,021	5.81
7.	Fine Udic Ustochrepts	3,557	5.14
Tiruttani taluk			
1.	Fine loamy Udie Ustochrepts	27,407.60	60.51
2.	Fine loamy Udic Haplustalfs	7,298.80	16.11
3.	Fine loamy vertic Haplustalfs	5,871.20	12.96

Sl.no.	Soil sub group	Area in ha.	Percentage
Tiruvallur taluk			
1.	Fine loamy, Udic Ustochrepts	30,913	49.71
2.	Fine loamy, Udic Haplustalfs.	14,164	22.77
3.	Loamy skeletal, Lithic Ustorthents	5,012	8.06
4.	Typic Ustipsamments	3,674	5.90
Uthiramerur taluk			
1.	Fine loamy, Typic Ustropepts	9,379	28
2.	Fine Udorthentic Chromusterts	6,918	21
3.	Fine loamy Udic Haplustalfs	6,210	19
4.	Fine Vertic Ustropepts	5,540	17
Uthukottai taluk [24]			
1.	Fine Loamy Udic Ustochrepts	7,605	20.8
2.	Fine loamy Vertic Haplustalfs	7,116	19.5
3.	Fine loamy Vertic Ustochrepts	6,275	17.2
4.	Loamy skeletal Udic Ustochrepts	4,184	11.5
5.	Fine loamy Udic Pellusterts	2,947	8.1
6.	Fine Entic Chromusterts	2,304	6.3

Major Crops - Agricultural and Horticultural Crops[25]

Alongwith atmosphere, soil constitutes the natural medium which supports the growth of plants on earth's surface. Soil is perhaps the more important of the two as plants derive their most essential nourishment from it. It not only serves as a reservoir of food materials and water needed by the plants, but also provides a mechanical anchorage for them. The soil is thin layer of earth's crust made up of disintegrated and decomposed rocks, containing complex mineral compounds, organic matter, water, air and living organisms like becteria, fungi, protozoa, insects, worms, etc. The importance of soil in the growing of plants and crops has been recognised by man since time immemorial, as is evidenced by the systems of soil classification adopted in India, centuries ago for the determination, of types of farming and the assessment of land rates and taxes.

Plants

Plants are the primary factor of agriculture. Besides plantation, floriculture and vegetable crops, all the cultivated species of cereals and pulses are grown since ages in India. Mention of paddy cultivation in India

has been made in Susrutha Samhita dated Ca. 1000 B.C. Maize, jawar, bajra and other millets were also introduced in India in the distant past. As regards pulses, India is the only country where a variety of them are grown[26].

Crops

Paddy, Sugarcane, groundunt, ragi, gingelly and chillies are the important crops raised in this district[27]. The total area of the district is 2,03,81,109 acres; of which 8,94,322 acres have been brought under cultivation. 60.5 percent of its working population is engaged in agriculture. This district mainly depends on seasonal rains for the success of agricultural operations, based on tank and Lift irrigation systems. The average rainfall in the district is 1211 mm.

Paddy

Paddy is the most important and extensively grown food crop. It is cultivated in widely varying conditions of rainfall, altitude and climatic conditions. It is grown at sea level, in river delta. The practice of paddy cultivation is greatly influenced by the pattern of rainfall distribution. A temperature range of 20°C to 30°C is required throughout the life period of paddy crop. There are three main seasons for growing paddy and these are named according to the season of harvest of the crop. The most important is the Kharif (winter crop) sown in June and July and harvested in November and December. Paddy is grown in all types of soils ranging from PH 4.5 to 8.0. The soils most suited for the cultivation of paddy are heavy neutral soils like clay. clayloam and loamy. Such soils are capable of holding water for long and will sustain a good paddy crop. The most important group of soils under which paddy can be succssfully grown are alluvial, red soils, laterite and lateritic soils, black soils, saline and alkaline, peaty and marshy soil[28].

The area under paddy cultivation in 1960-61 in the district was 8,20,331 acres and production in terms of rice was 3,60,270 tonnes. There is a Rice Research Station at Tirur. (The Research Station has been dealt with in greater detail against the subhead, 'Agricultural Research Station in this Chapter). The area under paddy cultivation as on date and production thereon etc., are dealt with elsewhere in the chapter.

There are three agricultural seasons sornawari (April-August) Samba (August-February) and Navarai (December-May). Paddy is cultivated in all these seasons. In Sornawari season, short duration crops are grown and in Navarai season short and medium duration crops are raised. During Samba period, medium and long duration crops are cultivated[29]. Paddy is cultivated on a large scale under tank fed and Lift irrigation conditions. It is also cultivated on dry lands under rainfed conditions[30].

The normal yield of paddy in the district is 5,000 kgs ha. The high yielding variety like I.R. 50 yield up to 9000 kg/ha. The details of yield of various varieties of paddy are tabled below[31]:

Season	Paddy Strain no.	Duration in days	Yield (in Kg)
(Sornawari Varieties)	ADT 36, IR, 36, IR 50 IET 1444, ADT 37, ASD 16, ASD 17 and TKM 9.	105-115	5 to 6 Tonnes/ha.
(Samba Varieties)	IR 20, White Ponni, CO. 43, CO. 44 ADT 40, ADT 39 CO. 45, CR.1009. PY-1, PY-4.		4 to 5 Tonnes/ha.
Navari Varieties	IR 20, ADT 36, IET 1444, ADT 39, ADT 37, ASD 16, IR. 64, ASD. 18.		4.5 to 5.0 M.T/ha.
Dry Sowing Season (July-Aug.)	TKM.9, IET. 1444, IR 50, PMK 1, MDU.1, white Ponni.	125-135	2.5 to 4.0 M.T./ha.
Semi dry Season (July-Aug.)	TKM. 9, TKM 10, IR 20, PMK. 1, MDU.1, ADT.36, ADT.37, TKM.2, ASD.16, IR.36.	105-135	3 to 5 M.T./ha.

Millets

Ragi

Ragi was grown in an area of 87,978 acres in 1960-61, the production in that year being 31,390 M.tonnes. Area under cultivation and production as on date are given in Appendices, 4, 4(a) & 4(b). About an extent of five cents of nursery bed is required for planting every acre of the main field. Cattle manure is used for this cultivation. Co-7 is a short duration high yielding variety, yielding 2 m.tonnes per acre. The area under ragi in 1991-92 is 4000 ha. and production is 10,000 M.t.

An area of 19,615 acres were under varagu cultivation in 1960-61 and the yield was 6920 tonnes. Details of area under cultivation and production as on date are given in *Appendices 4, 4(a) & 4 (b).* Duration of the crop is 130 days.

Pulses

The common pulses raised in this district are red gram, black gram, green gram, bengal gram and horse gram of which black gram occupies the major portion of the area. Total area under pulses cultivation was 12,274 acres in the year 1960-61 and total produce amounted to 1480 tonnes. During the year 1991-92, pulses are grow in 26,000 ha. and total production of pulses in 1991-92 is 13,000 m.t.[32]

Groundnut

This is usually sown in Navarai season. The duration of the crop is generally 100 days. The area under cultivation and yield are 9,000 ha and 98,000 m.tonnes respectively; TMV 7 is a short duration high yielding variety, yielding 1200-1500 kg. per acre[33].

Gingelly

Gingelly crop variety Co.1, TMV-3, TMV-5 are grown in Adi pattam (June-July); in Kartigai Pattam (October-November) and Co.1, TMV.1, TMV-4, TMV.6. and Paiyur-1 varieties during summer (February-March). The duration of the crop is 90 days and the normal yield in 600 kg/Ha.

Sugar cane

This is an important cash crop in the district. It was grown in 7000 ha. and production was 11.03 m.t. There are two Cooperative Sugar Mills in the district. One at Padalam and another at Thiruvalangadu which are fed by the sugarcane grown in the district. Thanks to the Five Year Plan schemes, more lands are brought under cultivation every year through irrigation and reclamation done on modern scientific methods. The noteworthy feature of the Fourth Plan is the IR-8 Paddy Crash Programme to cover over 75 per cent of the area of the district under high yielding varieties of paddy which has brought about a Green Revolution in agriculture.

Chengalpattu Taluk

The climate is temperate in the taluk. The soil may mainly be classified as loamy which is well utilised for raising paddy. Wherever there are tracks of red soil, groundnut and ragi are raised under rainfed conditions. Along the taluk's sea coast line of 40 km. which mainly consists of sandy tracks, extensive cultivation of casuarina plants is undertaken.

The south-west monsoon sets in June and continues till September, while north-east monsoon commences in October and lasts till December. As against the total this particular taluk accounts for 1213 mm. The majority of the residents of the taluk are agriculturists by Profession, mainly concentrating on raising the paddy crops. The area under paddy cultivation accounts for nearly 90 per cent of the total area under food crops and 81 per cent of the total area under both food and non-food crops. Paddy is cultivated in 103534 acres; the area under other crops grown are ragi in 7825 acres groundnut in 3325 acres gingelly in 2788 acres chillies in 802 acres sugarcane in 649 acres varagu in 362 acres Black gram in 156 acres

Kancheepuram Taluk

This taluk is predominantly agricultural in character with aggregate acreage of 136457 under cultivation. The taluk gets its rainfall from northeast monsoon and the annual normal rainfall is 1140 mm. Agriculturists of this taluk are adopted in taking advantage of the various suggestions for better

farm management given from time to time. As the five varieties of paddy raised in the taluk find a ready market in Madras city, they always endeavour to raise double crops of paddy, despite their depending heavily for water from the rainfed tanks and lift irrigation from innumerable wells fitted with electric motor pumpsets[34].

Madurantakam Taluk

This is one of the main paddy growing regions in the district. This taluk is blessed with innumerable tanks and notable among them is the Madurantakam tank, with an ayacut of 2,900 acres. The presence of a large number of tanks has facilitated cultivation of paddy crop on a large scale. The loamy soil together with the endeavours of the hard working ryots of this taluk has made the taluk one of the main paddy producing pockets of the district. Other important crops are sugarcane, ragi and groundnut. The sandy strip along the coastal line is replete with casuarina trees, and coconut groves. The climate of the taluk is temporate and is affected by both the monsoons, the south-west and north east. Since the eastern part of the taluk is surrounded by the sea, the taluk is occasionally affected by Cyclon. The average normal annual rainfall amounts to 1242 mm[35].

Edakalinadu of the taluk consists of 19 revenue villages and is located on the sandy track in between the sea on one side and the Buckingham canal on the other. From time immemorial raising of cocount groves and maintaining them on traditional pattern have become the mainstay of the residents of these villages. This area is considered as one of the pockets in the district which specialises raising of coconut groves[36].

Ponneri Taluk

The climate of the taluk is temperate. The period from April to June is considered to be quite hot. The agriculturists depend on cultivation, mostly on the seasonal rainfall. There are a number of tanks which get filled up during the north-east monsoon. Tanks are principle source of irrigation in this taluk. Some areas are irrigated by the Korattalaiyar and Araniyar. The rivers and tanks are mainly dependent on seasonal rains. The average annual rainfall in this taluk is about 1203 mm. The cropping pattern in rainfed lands is confined to millets like cumbu, cholam, and varagu; and groundnut is grown during kharif followed by horsegram during rabi season. Under irrigated conditions, crops like paddy, ragi, groundunt, cumbu, gingelly, chillies and vegetables are grown. Paddy is generally raised as a single crop in tank fed lands[37].

Sriperumbudur Taluk

About 70 per cent of the total population of the taluk are engaged in agriculture adopting improved methods of cultivation and high yielding strains of paddy ADT 27, IRS 8, etc. The agriculturists mostly depend on north-east

monsoon. The annual rainfall in this taluk is around 1054 mm. Devoid of rivers and the consequent absence of cannal system of irrigation, the agriculturists entirely depend upon the rainfed tanks for their water resources. The Chembarambakkam tank is the biggest in the district. The other important tanks in the taluk are Sriperumbudur and Manimangalam tanks[38].

Tiruttani Taluk

Annual normal rainfall of the taluk is 1188mm, and it is not adequate for raising crops all round the year. No irrigation projects exist in this taluk. As the wet lands are irrigated by rainfed tanks, the crops raised are highly susceptible to the vagaries of monsoon. Paddy and groundnut are the major crops, in this taluk.

Tiruvallur Taluk

Agriculture continues to be the mainstay of the majority of the people. The important crops raised are paddy, groundunt, ragi and gingelly, paddy is usually cultivated in about 1,28,000 acres and the production amount to 38,000 m.tonnes of paddy. Groundnut which stands next is cultivated normally in 48,000 acres producing about 18,000 m. tonnes of groundnut. There is a Rice Research Station at Tirur, a small village near Sevvapet railway station. High yielding variety of paddy called T.K.M. 6 evolved at this station has been well taken up by the agriculturists of the taluk and the surrounding places[39].

Saidapet Taluk

The climate of this taluk is temperate. It stands affected by both the monsoons. The sandy strips along the coast is replete with Casuarina plantations. The summer is hot and the heat is however mitigated considerably because of the sea breeze. The taluk is dependant on seasonal rains. The normal annual rainfall is 1286 mm. Paddy and ragi are the important crops raised in the taluk. Most of the area of the taluk is classified as Urban. Major and subsidiary crops cultivated (Divisionwise) during 1989-90; area under cultivation by these crops from 1980-81 to 1990-91 and the normal yield per hectare are shown in *Appendices - 14, 15 and 16.*

Crops cultivated and their normal area under cultivation. The total normal area under paddy is 250000 ha. comprising 24000 ha. under Sornawari; 166000 ha. under Samba and 60000 ha. under Navarai. Ragi is grown in 6000 ha. under irrigation and 4000 ha. under rainfed. Cumbu is grown under irrigation in 1500 ha. and under rainfed in 500 ha. Pulses are grown in 25000 ha. Sugarcane is cultivated in 4000 ha. under planted and in 3000 ha. in ratoon. Cotton is cultivated in 200 ha. Groundnut is grown in 60000 ha. and 30000 ha. under irrigation and rainfed conditions respectively[40].

Cropping Pattern

Paddy, groundnut, cumbu and ragi are the important crops grown in the district besides vegetables. Paddy is raised in three season as shown below[41]:

Three Seasons Paddy Rotation

First Season	*Second Season*	*Third Season*
Paddy-Samba Variety	Paddy-Navarai Variety	Paddy-Sornawari Variety
July-August	December-January	April-May
Medium to long duration 120-150 days.	Medium duration 120-140 days	Short duration below 120 days

Two Seasons Paddy Rotation[42]

Paddy-Samba Variety	Groundnut	Paddy-Sornawari Variety
(July-August)	(December-January)	(April-May)
Paddy-Samba Variety	Ragi	Paddy-Sornawari Variety
(July-August)		(April-May)
Paddy-Samba Variety	Paddy-Navarai Variety	Cumbu Variety
(July-August)	(December-January)	(February-March)

One Season-Paddy Rotation

Paddy-Samba Variety (July-August)	Pulses (November-December)	Cumbu (February-March)
Paddy-Samba Variety (July-August)	Sugarcane (December-January)	Sugarcane (Ratoon/Second year December)

Crop Rotation and Crop Seasons

Sornawari	Samba	Irrigated condition (December-January)
Rice	Rice	Groundnut (wet)

Dry Rainfed (June-July)	September-October	
Groundnut	Ragi	Rainfed
Samba single crop	December-January	
Wetland		
Rice	Pulses Rice fallows	Wet
February-March	*July-August*	
Cumbu	Rice	Wet
Ragi	Rice	Wet

Paddy is cultivated in the wet, rainfed and semidry conditions. Ragi and cumbu are grown under wet and rainfed conditions. Groundnut and gingelly are cultivated both irrigated and rainfed seasons. Sugarcane is grown in wet condition[43].

Farming in Chengalpattu MGR district is classified as follows:

1. Rainfed cultivation *i.e.,* Dry Cultivation. 2. Tankfed cultivation (Semidry and wet cultivation). 3. Irrigated by wells (wet cultivation). 4. Salt affected soils.

Rainfed Cultivation

Paddy, groundnut and millets are grown under rainfed cultivation. Paddy is grown in 0.22 lakh hectares, whereas millets and groundnut are grown each in 0.36 lakh hect.

Tankfed Cultivation

Under tankfed, paddy suitable for semi-dry cultivation is raised in 1.64 lakh hect. Similarly, regular transplanted paddy supplemented by wells is cultivated in 0.44 lakh hect. During the samba and navarai season, paddy is raised in 1.5 lakh hect.

Irrigation by Wells

Under well irrigation, crops such as paddy, groundnut, vegetables, cumbu and ragi are cultivated.

Salt Affected Soils

An extent of about 0.3 lakh hect. is salt affected area in the district. Soil reclamation is done by the Agriculture Department in a phased manner.

High Yielding Varieties

The development of high yielding varieties of crops in the mid-sixties shed new rays of hope and confidence towards increasing the agricultural productivity in India in order to meet the challenge of growing population. Mass acceptance of these varieties by the farmers led government to extend its support to supply good quality seeds, fertilizers, pesticides and credit facilities for installing tube-wells, purchasing farm machines and reclamation of land etc., to the cultivators[44].

For popularising highyielding varieties among farmers, Union Ministry of Agriculture initiated high yielding varieties programme. This progamme was further strengthened with the initiation of National Demonstration and Minikit trials of the farmers' field by Indian Council of Agricultural Research. For meeting the requirement of seed, National Seeds Corporation was established under the Union Ministry of Agriculture with the setting up of seed selling centres all over the country. Besides, each State Government set up their own seed-producing agencies of State Seed Corporation. In addition, large number of private seed growers were registered to produce certified seed for being supplied to cultivators at the government prescribed rates.

High yielding varieties grown in the district, are tabled below[45]

Crops		*High Yielding Varieties*
1. Paddy		
Sornawari (April-May)	..	TKM9, IET1722, ADT.36, IR.36, IR.50, PY.2, CO.41, ADT.31, IET.144 (Ragi)
Samba (July-August)	..	IR.20, Ponni, White Ponni, CO.43, Bhavani
Late Samba (September-January)	...	Ponni, Co-44, I.R.20
Navarai (December-January)	...	IET.1722, IR.20, TKM.9, ADT.36, IET 1444.
Dry (July-August)	...	TKM 9, IET 1444, IR50.
Semi Dry (July-August)	...	TKM9, IR20.

Cholam	..	CO.23, VO.24, CO.25, CSH5, COH.3
Ragi	..	CO.7, CO.10, CO.11, CO.12, CO.13, PR.2, PR.202, PYR.1
Sugarcane	..	CO.49, CO.62198, CO.6304, COC.8001, COC.8201, CO.671
Groundnut	..	TMV.2, TMV.7, TMV.10, TMV.12, JL.24, CO.1, CO.2

Horticulture

Chengalpattu-MGR district enjoys semi-arid tropics climate which is condusive for horticultural development. This district is highly suitable for growing fruit trees such as mango, pine apple and lime besides cashew, vegetables and flowers. There is good scope for raising agricultural crops as well as fruit trees side by side as part of Integrated Farming System. Growing agricultural crops as inter crops in horticultural fields along with horticulture crops is also possible. Please see *Appendix - 17*. State Horticultural Farm at Athur in Chengalpattu taluk is engaged in multiplication and distribution of seedling of mango, lime and ornamentals. The area covered under horticultural crops[46].

The area covered by banana, mango, lime, other fruit crops are 1696 ha. 2783 ha. 465 ha. and 346 ha. respectively. Cashew, chillies, tapioca, sweet potato, brinjal and other vegetables are grown 960 ha. 35111 ha. 930 ha. 770 ha. 1272 ha. and 1420 ha. respectively. Bhendai and turmeric are grown in 660 ha. and 68 ha. respectively. Flowers are raised in 855 ha.

Seasons for the cultivation of various horticultural crops in the district is as follows[47]:

Season of Horticultural Crops and Yield

Name of the crop	*Season*	*Yield*
Fruits		
Banana	March-April April-May	40-50M Tonnes/ha.
Mango	July-December	40 M.tonnes/ha.
Jack	June and July	30-40 M.t./ha.
Pine apple	July-September	50 M.t./ha.
Guava	June to November	25 M.t./ha.
Grapes	June-July	30 M.t./ha.
Acid lime	June-November	25 M.t./ha.
Vegetables		
Tapioca	April	15-20M.t./ha (rainfed) 30-40M.t./ha (irrigated)
Sweet Potato	June-July September-October	25-30M.t./ha.
Onion	May-June	15-18M.t./ha.
Brinjal	December-January May-June	25-30M.t./ha.

Name of the crop	Season	Yield
Tomato	May-June, November December-February-March.	35M.t./ha.
Bhendai	Throughout the year	16 M.t./ha.
Chillies	June-July	2-2.5t. dry pods/ha.

Horticultural diseases and remedial measures[48]

Mango: Powdery Mildew

White powdery growth appears in the inflorescence which affects the fruit set very drastically. It is effectively controlled by spraying wettable sulphur 0.5 per cent solution.

Banana

Bunchytop, pentalonia nigronervosa affect the banana plants

Bunchytop is a virus disease transmitted by (vector) an aphid.

The plants affected by pentalonia nigronervosa show crinkling of leaves at the top and the affected plants will not produce bunches. If the disease occurs in the later stages, the formed bunch is very thin and weak. The plant shows a white powdery deposition in the pseudostem and leaf petiole. It is controlled by checking the aphid population by spraying systematic insecticides. The infected plants are destroyed by pouring 100 ml, of kerosene in the crown or by injecting 2,4-D 150 g in 400 ml. of water into the psendostem, by using the injection gun.

Panama Wilt is a fungal disease caused by Fusarium *Oxysporum.* The affected plant shows yellowing of leaves dropping down from the crown. The pseudostem shows vertical splitting. Yield is drastically reduced.

Control Measures

Severely affected plants should be destroyed. A quantum of one-two kg. of lime should be applied in the pits after removal of the affected plants. A portion of soil should be removed and the upper portion of one corm exposed. An oblique hole of 45 angle should be made to a depth of 10 cm. Immediately, three ml. of two per cent carbendazim solution should be injected with the help of hypodermic syringe. The corm injection should be repeated after a month of application of capsules containing 50-60 mg. of carbendazim to a depth of six cm. on the hole made by the applicator on the corm portion of banana plant.

Citrus - Quick Declina : It is a virus disease caused by citrus trasteza virus. The affected plant loses its vigour, leaves become very small stunted

in growth and finally the plant will die. It can be prevented by planting pre-Immunised Acide lime seedlings.

Improved package of practices

Banana : To improve the grade of bunches 2, 4-D at 25 ppm may be applied in Poovan, Monthan and Rasthali after the last hand is opened. This will also help to remove the seedness in poovan variety. Urea 10g may be tied in polythene bags, 15 days after the last hand has opened, after the removal bud for increasing the fruitsize in Monthan.

Mango : NAA spray at 20 PPM (Olonofix) at flowering, increase the fruit set. Flowering should not be allowed up to three years. Among crowded terminal weak shoots, are thinned to retain healthy shoots. During February, 0.5 per cent area may be sprayed to induce flowering of trees which do not flower by that time.

Guava : Prunning of past season (terminal growth to a length of 10-15 cm) is to be done during September-October and February-March to encourage more laterals. The erect growing branches are to be bent, by lying on to pegs driven on the ground. Old unproductive but healthy trees may be either pollarded (out the trunk of 75 cm from ground level) or dehorned by cutting the secondary branches at a distance of 75 cm. from their origin.

Schemes

Integrated Horticultural Development Scheme

This scheme aims at popularising and motivating the farmers to cultivate fruit and vegetable crops by bringing more areas under horticultural crops. It includes the distribution of fruit tree saplings, vegetables seeds, spices, plantation crops and flower crops. Under this scheme, the fruit plants are given to small and marginal farmers under 50 per cent subsidised rate. The cultivation details and other technical details are given to the farmers[49].

Cashew Development Scheme

This scheme is implemented in order to extend the area under cashewnut cultivation. Under this scheme, the cashew plants are distributed to the farmers in 75 per cent subsidised rate. For the maintenance of cashew plantation, inputs like fertilizers and plants protections, chemicals are distributed under 100 per cent subsidy to the farmers[50].

Tamil Nadu Women in Agriculture (TANWA) Project

Tamil Nadu Women in Agriculture Project popularly known as TANWA was started in Tamil Nadu in November 1986. This project is aided by DANISH International Development Agency *i.e.,* DANIDA for a period of seven years with a plan outlay of Rs.3.21. At present, this project is implemented in six coastal districts and Chengalpattu M.G.R. district is one among them.

Objectives of The TANWA, project

1. To promote the growth rate in agriculture and to strengthen the Farm Women's position in society; 2. The secure full utilisation of women's potential in the agricultural production on small and marginal holdings thereby improving the productivity and the quality of life of all family members; 3. To provide the farm women with an upto date knowledge of relevant agricultural technologies; 4. To guide them to adopt relevant new technology and give them appropriate skill through practical training; and 5.To encourage them to take the lead and share the skill with other farm women. Selection of farm women, imparting training to them and follow-up activities are the main aspects of this project.

Selection of Farm Women And Training

30 farm women, *based on certain norms*, are selected for each training and training is imparted for five days. It is skill based training. A sum of Rs.10/- per day per trainee is paid as stipend. Apart from this, inputs like seeds and seedlings are also distributed to the trainees.

Follow up activities

Involvement of the trained farm women in follow up activities is an important aspect of the training;. Based on the needs of the farm women, 4 skill demonstrations are conducted by the training officers (Farm women) for each training. Apart from this, the trainees are also given technical support as and when required by them.

The follow up demonstrations are conducted with a financial assistance of Rs.200/- for four demonstrations. Some of TANWA trained women are enrolled as contact farmers in the regular extension system by virtue of training undergone by them. They keep contact with the extension staff and get benefited by the technical know how. The training for the farm women has been completed in Kancheepuram and Uthiramerur taluks. Particulars of the progress made so far by TANWAS are table in the *Appendix - 18.*

Oil Seeds Development Programme[51]

Oilseeds Development Programme are implemented by three Assistant Directors of Agriculture (Oil-seeds) with headquarters at Kancheepuram, Chengalpattu and Tiruvallur. The Coconut Development Scheme is being operated by the Assistant Director of Agriculture (Oilseeds/ Coconut) at Nandanam. The Agricultural inputs are supplied to the farmers through 27 Agricultural Extension Centres at Block level and 30 sub-depots.

Area coverage and productivity of oilseeds crops

Groundnut, gingelly and coconut are the major oilseeds crops grown in the district. The normal rainfed groundnut area in the district is 30,000 hec. while the irrigated area is 55,000 ha. including 5,000 ha. cultivated in

summer. During 1989-90 groundnut was however cultivated over an area of 92,400 ha. The normal area under gingelly crop is 5,000 ha. During 1988-89, an area of 9,200 ha was brought under cultivation.

Productivity

The average productivity, of groundnut (three years average) in the district is 760 kg./ha. during kharif and 1680 kg/ha. during Rabi. The productivity during kharif 1988-89 was 802 kg/ha. while in Rabi, it was 2197 kg/ha. The average production of gengelly in the district was 425 kg./ha.

Departmental Activities

To cover five per cent are in the district under groundnut, quality seed is procured for distribution. About 15 per cent of the area is under gingelly cultivation. During the year 1988-89, 700 mt. of groundnut seed were procured and 650 mt. of seeds distributed.

National Oilseeds Development Programme

National Oilseeds Development Programme is implemented in the district from 1985-86 onwards. A sum of Rs.26.685 lakh was spent under this scheme during 1988-89. The groundnut growers are supplied with necessary inputs on subsidised rates under this scheme. During 1989-90, a sum of Rs.32.150 lakh was provided under the scheme.

Oilseeds Production Thrust Project

The expenditure under this project is fully financed by the Government of India, and is implemented in this district from 1987-88 onwards. During 1988-89, a sum of Rs.62.253 lakhs was spent under this project. Similarly in 1989-90 a sum of Rs.38.593 lakhs was spent under this scheme. From 1990-91 onwards, a centrally sponsored programme known as Oilseeds Production Programme has been introduced and the expenditure incurred in the year was Rs.61.679 lakh. During 1991-92, a sum of Rs.54.514 lakhs has been provided.

Coconut Development Scheme

Production and distribution of coconut seedlings

Production and distribution of quality Tall and Tall x Dwarf coconut seedlings are undertaken by this department. During 1988-89, 23,745, seedlings of Tall varieties and 41,666 Tall x Dwarf seedlings were distributed. For this purpose, this department has established nurseries at Pitchivakkam for multiplication of Tall coconut seedlings. Tall x Dwarf coconut seedling are produced at Madhavaram nurseries.

Eradication of Thanjavur and Kerala wilt affected coconut palms

During 1988-89, 379 Kerala wilt affected trees were removed and new coconut seedlings were planted. For removing the wilt affected trees, an amount of Rs.80/- per tree is given to the cultivators.

Special Component Programme

Oilseeds and coconut seedlings are distributed at 25 per cent subsidy to the scheduled castes and scheduled tribes oilseeds growers. During 1988-89, a sum of Rs.1.35 lakhs was spent under this scheme. During 1989-90, an amount of Rs.2.055 lakhs has been spent against the target of Rs.2.650 lakhs.

Foundation Seed Production Centre, Musaravakkam

Quality Breedar and Foundation Seeds of groundnut, gingelly and caster seeds are produced in the Foundation seed Production Centre at Musaravakkam. The farm is located about 12 km. away from Kancheepuram towards Vellore. The farm consists of 61.98 ha. with a cultivable area of 58.50 ha. yield maximisation trials in groundnut is conducted since 1987-88.

Coconut Mother Palm Garden, Putlur

This form consists of 22.08 ha., with a cultivable area of 19.24 ha. So far, an area of 11.10 ha. had been planted with seedlings of West Coast tall, East coast tall (Tamil Nadu) East Coast tall (Orissa) Laccadive ordinary, Tiptur Tall and Andaman Ordinary varieties[52].

Tamil Nadu Co-operative Oilseeds Grower's Federation Limited (TANCOF)[53]

Tamil Nadu Co-operative Oilseeds Grower's Federation Limited, popularly known as 'TANCOF'was formed by Government of Tamil Nadu on 1 January 1981 to implement the National Oilseed Project in the state with the assistance of National Dairy Development Board (NDDB). The main objective of TANCOF is to carryout activities conducive to the Socio-economic development of oilseeds growers of the co-operative society by integrating effectively production, procurement, processing and marketing of oil and oil products. The authorised share capital of TANCOF is Rs.five crore. The membership of TANCOF is open to Registered Primary Oilseeds Growers' Co-operative Societies in the area of operation and National Dairy, Development Board, The paid-up share capital is Rs.159.76 lakhs of which, NDDB has contributed Rs.98.88 lakhs and the balance amount of Rs.60.86 lakh by the Oilseeds Grower's Co-operative Societies.

The Oil Seed Project is implemented in Tiruvallur, Tiruttani and Pallipattu taluks of the Chengalpattu-MGR district by forming Oilseeds Grower's Co-operative Societies. It covers an area of 24158 hectares by enrolling 3334 members. The federation has already extended its activities in Chengalpattu, Madurantakam and Cheyyoor by operating through Direct Purchase Centres as part of phase-II expansion. The phase-II expansion envisages the formation of Regional Co-operative Union for Chengalpattu MGR, North Arcot and Thiruvannamalai districts.

The farmers are encouraged to sell their produce through their co-operative societies. Shelling, moisture and refraction are the basis which determine the quality. In all the seasons, TANCOF arranges to procure the oilseeds from the farmers. A commission of 1.5 per cent is given to the society on the total value of the procurement made in each season. The peak procurement is normally during the main season *viz.*, Rabi which starts from second week of February. The federation has entered the market with products with brand name Purenut (expeller groundnut oil) and WINNER (refined groundnut oil).

Progress of Scientific Agriculture in the district[54]

Scientific agriculture is fairly well established in the district. Scientific agricultural activities such as 1. 3 P Demonstrations; 2. Compact block demonstrations; 3. Five step approach; 4. 9 MT per hectare; 5. High yielding varieties coverage; 6. Reclamation of saline and alkaline soils; 7. Integrated Nutrient management; 8. Weed Management; 9. Watershed development and rainfed technology; 10. Sprinkler and drip irrigation; and 11. Using of bio-fertiliser are adopted in the district.

Special Foodgrains Production Programme in the district

In order to increase the rice production in Tamil Nadu, eight districts namely 1. Chengalpattu-MGR; 2. Composite South Arcot; 3. Composite North Arcot; 4. Tiruchirappalli; 5. Pudukkottai; 6. Composite Thanjavur; 7. Madurai; and 8. Tirunelveli were selected during 1988-89 and 1989-90 to implemented the scheme.

In 1990-91, Salem District was also included for the implementation of the programme[55].

Rice Production in Chengalpattu-MGR District

Rice is the major crop of the district and it occupies 70 per cent of the gross cropped area. It is principally grown in three different season *viz.*, Sornawari, Samba and Navarai. Sornawari is raised in April-September, Samba in July-January, and Navarai in January-April. The coverage is much influenced by the monsoon rains. The samba crop includes 66,000 ha. under rainfed and semidry, out of 1.92 L.Ha. The sewing of sampa paddy mainly depends on South West Monsoon. Later, the success of the crop depends on the adequacy of rainfall from North East Monsoon. The Navari crop is dependent on the Lift irrigation and residual storage in the tanks, while the Sornawari crop is exclusively dependent on Lift irrigation. The area, production and productivity from 1982-83 to 1991-92 are shown below[56]:

Year 1.	Total Paddy coverage (L.Ha) 2.	Production of rice (lakh tonnes) 3.	Productivity(Rice) Kg/ha. 4.
1982-83	2.17	3.3	1517
1983-84	2.99	5.64	1882
1984-85	3.11	3.62	1806
1985-86	3.08	7.67	2493
1986-87	2.22	5.97	2685
1987-88	2.19	5.68	2593
1988-89	2.11	6.70	3170
1989-90	2.50	7.93	3176
1990-91	3.04	8.56	2804

Under the programme, the resources are mobilised for maximum benefit of rice growers particularly in high productivity pockets. Farmers are motivated to harvest higher production through intensive / extensive cultivation and on new inputs.

Monitoring and review of progress

Apart from the periodical assessment of seasonal trend, inputs position, pest and disease build up, credit improvement (both short and long term) etc., interim evaluation of the anticipated yields based on crop stand and probable adjustment of technology for special situation is also carefully done.

During the year 1989-90, the financial target was fixed at Rs.128.475 lakhs and the achievement was Rs.128.705 lakhs. In 1990-91, the financial achievement was Rs.74 lakhs as against the target of Rs.74 lakhs.

Increase in production after the implementation of Special Foodgrains Production Programme in the district[57]

Year	Areas Coverage L.ha.	Production L.Mt	Productivity Per.ha.	Increase Kg/ha.
1988-89	2.33	6.83	2986	443
1989-90	2.56	8.07	3153	217
1990-91	2.5	8.20	3280	127

Paddy is cultivated nearly one-third of the cultivable area under Samba period in the dry and semi-dry conditions. The dry paddy yield is mostly determined by the quantum and distribution of rainfall rather than the technology.

After the implementation of the Special Foodgrain Production Programme, the new technologies like Weedcide application, Gypsum to paddy, Micro nutrient Zinc sulphate application, are widely adopted by the farmers. The programme has initiated the farmer in the scientific way of rice cultivation. The yield improvement cannot judged by the quantum of amount spent in a single year. It is a long way process and it has given the strong bar for higher productivity and production. During 1990-91, distributing power tiller and power thrasher to the farmers has been started, since it will help them to tide ever the labour shortage and give way for mechanised farming.

Training and Visit Programme

The Training and Visit Programme assisted by World Bank has been introduced in Tamil Nadu in two phases from 1981-82. The modernisation of the extension system involves well defined job responsibilities and operational officiency at various hierarchial levels. Initially, contact farmers are selected by the Assistant Director of Agriculture (T&V) with the help of Village Extension Workers and Agricultural Officer/Deputy Agricultural Officers (T&V). The contact farmers are generally practising farmers with reasonably good standard of agricultural production. Representation is given to small, medium and marginal farmers. Due representation is also given to Adi-Dravida farmers[58].

The Village Extension Worker divides the farmers under his jurisdiction into eight groups and then selects contact farmers from each group up to 10 members according to guidelines,-*i.e.,* 10 per cent of the families in each group is selected as contact farmers.

The Village Extension Worker visits each of the eight groups on a fixed day as per schedule, so that, each group is visited for a full day once in a fortnight and is adhering to the schedule strictly. During the visit, he meets the contact farmers and also the other farmers. He participates in the fortnightly training sessions and also encourages farmers participation in field days. He maintains daily record of work in the diary in the prescribed proforma and records the observations made in the fields along with the remedial measures recommended. He organises demonstration on all crops except trail-*cum*-demonstration on sugarcane, which is laid by Agricultural Officer/Deputy Agricultural Officer (T&V).

The Agricultural Officer/Deputy Agricultural Officer provides support to Village Extension Workers in building up their professional competence and guides them in performance of their duties. He visits each Village Extension Worker at least once a fortnight, gives technical advice and extends support to him. He communicates to Assistant Director of Agriculture/Subject Matter Specialist the progress made during each fortnightly sessions, special achievements, field problems, bottlenecks and operational difficulties. He

suggests ideas for field trials and demonstration. He conducts field trials in the farmers' field under their supervision on important problems. He organises field days in Village Extension Workers' circles.

Duties of the Assistant Director of Agriculture (T&V)

The Assistant Director of Agriculture (T&V) draws out a production programme for his area and sees that it is implemented at village level with the assistance of Village Extension Worker and coordinates all aspect including input supply. He is in-charge of the implementation of the extension programme in his jurisdiction and exercises full technical/financial/ administrative control over the entire staff in his area. He spends at least three days a week, reviewing the extension activities in the field, checking the farmers awareness of Village Extension Worker's visits, etc. He also conducts the fortnightly training sessions. He organises training programme to farmers, field days, farmers days, etc., and sees that these programmes are implemented affectively. He reviews the execution of various programmes of demonstrations, Adaptive Research Trials, etc., and sends the details of results to Joint Director of Agriculture (T&V) for analysis. He periodically reviews the supply position of inputs, *i.e.,* seeds, fertilisers, plant protection chemicals etc., with the Agricultural depots, fertiliser dealers etc., and normally apprises the fact to the Joint Director of Agriculture.

The functions of the Deputy Director of Agriculture (T&V) are given below

The Deputy Director coordinates all the T&V activities at district level and assists the District Joint Director of Agriculture in the successful implementation of T&V Programme. He spends at least two days a week - reviewing extension operations in the field, checking farmer awareness of T&V staff visits and knowledge and understanding of the issue. He normally spends at least one day once in two weeks, to participate in the fortnightly training session in one of the taluks. He organises monthly workshops for subject matter specialists and Assistant Directors of Agriculture in collaboration with the Agricultural University and other technical officers to identify and discuss the technical recommendations for the succeeding month.

Functions of Joint Director of Agriculture at district level

The Joint Director of Agriculture draws out a broad production programme for the district and sees that it is broken up area-wise down to the village level, reviews and coordinates all aspects including input supply to achieve this programme. He is responsible for the implementation of the extension programme and exercises technical, financial and administrative control over the entire staff of the district. He organises monthly workshops alongwith subject Matter Specialists and Assistant Directors of Agriculture in collaboration with the Tamil Nadu Agricultural University and other

concerned technical agencies, to identify and discuss the technical recommendations for the succeeding month. He is the Chairman of the District Technical Committee. He sees that this Committee meeting is convened at least twice a year to review and formulate recommended agronomical practices, trials, etc., for onward transmission to the Director of Agricultural for consideration. He passes the final recommedation to extension staff of the district with suitable local modifications as a appropriate.

Chengalpattu district is one among the seven districts brought under T&V programme in the first phase during 1981-82. Chengalpattu is centrally located with sizeable area under sugarcane cultivation and the headquarters of the Assistant Director of Agriculture (Sugarcane Seed Multiplication). The other four Assistant Directors of Agriculture (Seeds) of the district are stationed at Kancheepuram, Madurantakam, Tiruvallur and Saidapet. All the Assistant Directors of Agriculture including Assistant Director of Agriculture (Sugarcane Seed Multiplication) attend to the Seed Multiplication of all crops like cereals, pulses, etc., including sugarcane. Six Agricultural Officer/Deputy Agricultural Officers with supporting staff have been placed at Kancheepuram, Madurantakam, Chengalpattu, Uthiramerur, Tiruvallur and Tiruttani[59].

Sugarcane Parasite Breeding Centre

There is a Parasite Breeding Centre at Madurantakam with an area coverage of 500 hect. for production of Parasite *Trichogrammes austrlicum* for inundated release in the cane growing areas which have economic and effective control of early shoot borer and intermode borer. The centre is functioning from 1981.

In the Chengalpattu-MGR district, there are 270 village extension workers, 2,83,191 farm labourers and 26,711 contact farmers[60].

High Yielding Varieties Programme

During the year 1965, the high yielding varieties programme was launched as the distinctive strategy for increasing agricultural production. The new technology requires frequent application of fertilisers and insecticides and has resulted in double cropping, transportation of larger volumes of produce, increased marketing and processing produce[61].

The scientific knowledge in the field of agriculture has advanced gradually and the vast spreading of the high yielding varieties programme has resulted in the increased food production of the country. Indian farming is conducted under different agro climatic conditions and, therefore, involves a wide range of operations and management practices. The success of the high yielding varieties programme entirely depends on the intensive application of chemical fertilisers, pesticides, assured irrigation and enough timely credit. Since rice is the main staple diet of the Indians, an increase in the total rice production in increasing the yields per unit is more important.

Many development programmes like the Intensive Agricultural District Programme, Intensive Agricultural Area Programme and the High Yielding Varieties Programme were introduced in Tamil Nadu for Achieving increased food production. The High Yielding Varieties Programme was initially introduced in 1966-67 in Tamil Nadu.

In the Chengalpattu-MGR district, four panchayat unions, *viz.*, Minjur, Ikkadu, Madurantakam and Poonamallee were selected and four villages, *viz.*, Agaram, Pakkam, Thonnadu and Korattur (one each from each panchayat union) were selected for the study.

Agricultural implements and machineries used in the district

Quite a variety of implements and machineries are required for carrying out various agricultural operations, starting from ploughing to harvesting and storage of grain. These operations include ploughing, harrowing, levelling, sowing, intercultivation, application of fertiliser and manure, harvesting, threshing and winnowing. The Indian Council of Agricultural Research undertook a country-wide survey for ascertaining the use of indigenous agricultural implements in India. The Survey revealed that the number of implements used by Indian farmers is really very large. Some of these implements, even if they look crude, are really useful. To do this effectively, Government of India have established a research-*cum*-testing centre in each state. The object is to improve indigenous agricultural implements, to design new implements and to test them in the field up to the prototype level[62].

Agriculturists in the district have become increasingly aware and receptive to modern methods of agriculture, and have gradually been switching over to deep ploughing with tractors, chemical manuring, use of improved seed and adoption of crop protection methods.

Ploughs, bladed harrows, wheel burrows, levellers, clod crushers, bund farmers, harvesting, threshing implements which are used in other districts in the state are also used here.

Other Important Implements

The machines that process the farm produce include sugarcane crushers, fodder cutters, groundnut decorticators, hullers, or shellers.

Sugarcane crushers: Formerly, juice was extracted from the cane by crude two-roller wooden crushers. With the growing of improved varieties of cane, a three roller cast iron crusher operated either by bullock power or by engine power has been put into the market. This has got greater crushing efficiency and, therefore, farmers are either buying such crushers or taking them on rent during the season.

Groundnut Decorticators: When the groundnut is to be sown, women labourers are employed for breaking the pods and out the grain. In doing so, the upper shell of the taking/grain is broken or the two clotyledons of the

grain are also separated, making it useless for sowing because such damaged grain will not germinate. Groundnut decorticators, have been designed. The maganwadi type of groundnut decorticator is like a cradle with a screen placed below. The other rotary decorticators, either hand-operated or power operated are also available.

Farm Power

Apart from the manual labour, greatest amount labour, greatest amount of farm power is provided by animals. Amongest animals, mostly bullocks are used. The efficiency of using the bullocks depends upon their feeding, maintenance and also their yoking as well as training.

Tractors and Tractor drawn Implements

Even though more emphasis is given on manually operated and bullock-driven implements and machinery, mechanisation of agriculture by power-driven implements is more popular now a days. During the pre-Independence period, the labour was relatively cheap and the industries were under developing stage. However, these conditions are rapidly changing since Independence. The farmers are becoming aware of efficiently running a farm, as a business by introducing high yielding varieties. The government on their part are also doing the best to bring home the results of scientific research to the farmers. These changing conditions call for a beginning at mechanisation and fairly rapid progress thereon.

Tractor: A tractor is a prime mover. For attachment to the tractor we must provide different agricultural operations. The tractors are classified into Crawler tractor, or Track layer, four-wheeled tractors of 15 to 60 Horse Power and small tractors and power tillers.

Tractor Driver Implements

The tractor driven implements can be classified into two parts. One set of implements is for tillage operations and another set for stationary operations. Under the tillage operations, the implements are plough, harrow, seed-drill, and combined harvesters and threshers. Under the stationary operations are pumps, stationary threshers and winnowers, graders, etc., In additions, the tractor can also be used for transporting fertilizers, manures, or grain by attaching trailers. The tractor ploughs are of two kinds, namely, the mould board and the disc plough, They cut two to five furrows at a time, depending on the number of complete bottoms or bodies composing the plough. Correct speed of the operation is important for good ploughing. The best speed for ploughing with normal types of ploughs is from 1.5 m.p.h. depending upon soil and other field conditions.

Seed Drills and Planters: The seed drills can sow all kinds of small seeds like jowar, paddy, whest etc., and can be adjusted for variations in size of seed, depth of seeding, seed rate and the distance between the

rows. Drawn by wheel type or light crawler tractors, they can sow up to about 30 acres in a day, depending upon soil condition. Planters are employed to sow seeds in rows far enough, apart to permit mechanical intercultivation. They are designed to sow, depending on the crop.

Manufacture of Agricultural implements and machines

Since Independence, quite a large number of firms in India have started manufacturing implements. The village blacksmiths and carpenters still occupy a very important position in manufacturing simple agricultural implements. They manufacture indigenous implements and bullock carts.

The agricultural implements which are generally used in the district are seed-*cum*-fertilizer drill, bund farmer, hand operated sprayers, power operated sprayers, levelling boards, power tillers, hatchet and sickles[63].

There were 675 seed fertilizer drill, 3904 seed drill, 54466 chaff cutter, 9038 wheel hoc, 3160 sprayer and 2102 duster under primitive types and 3305 disc harrow, 2855 cultivator, 1661 seed-*cum*-fertilizer drill, 5811 seed drill, 20347 levelling harn, 9524 wet land pudder, 23239 animal cart and 329 sugarcane thresher in the district. The modern implements include 15 crawler, 2770 four wheel tractor, 592 power tiller, 11364 oil engine pumpset, 90 power sprayer, 74157 electric pumpset and 82 thresher paddy[64].

The Government of Tamil Nadu have set up Tamil Nadu Agro Engineering and Service Co-operative Federation and Tamil Nadu Agro Industries Corporation to provide Agro Engineering services to rural farmers and to encourage industries which help the growth and modernisation of agriculture. They also render service to the farmers by supplying quality seeds, fertilizers, pesticides, agricultural implements and plant protection equipments etc.

The activities of the Tamil Nadu Agro Engineering and Service Co-operative Federation and the Tamil Nadu Agro Industries Corporation are highlighted below:

Tamil Nadu Agro Engineering and Service Co-operative Federation (ENCOFED)

The Tamil Nadu Agro Engineering and Service Co-operative Federation popularly known as (ENCOFED) is functioning as an apex body with 155 Block Level Agro Engineering and Service Co-operative Centres and 12 District Co-operative Agro Service Societies providing a package of Agro Engineering services to rural farmers like custom hiring of agricultural machineries and implements, servicing of agricultural machinery and supply of agricultural inputs like seeds, fertilizers, pesticides, agricultural implements and plant protection equipments, etc.

ENCOFED has implemented the government special schemes like Channelisation Scheme, under which diesel engine pumpsets and electric motor pumpsets are supplied to farmer loanees. Under Save Grain Campaign Programme, ENCOFED affiliates have been manufacturing and distributing Grain Storage Bins to the farmers with 25 per cent subsidy. Under Centrally Sponsored Scheme Farmers' Agro Service Centre, ENCOFED through its select affiliates, is manufacturing and distributing improved agricultural implements and hard tools to the small, marginal and Scheduled Caste/ Scheduled Tribes farmers under subsidised rates[65]. The ENCOFED has enlarged its scope and activities by taking up various activities like supply of fertilizers to sugarcane growers etc. The Federation has also taken up the rectificaion of diesel engine pumpsets in Tiruttani block in the district.

The Chengalpattu District Co-operative Agro Service Society Ltd., at Kancheepuram is providing Agro-Engineering Services in the district. Besides, there are eight Agro Engineering & Service Co-operative Centres functioning at Tiruttani, Thiruvalangadu at Kanakammachatram, Thirukalikundram, Acharapakkam, Ellapuram at Uthukottai, Kadambathur, Kattur at Minjur and Poonamallee. The objects and activities of the Chengalpattu District Co-operative Agro Service Society Ltd., are (1) To acquire, hire and undertake repairs of pumpsets, electrical equipments, oil engine drills, and drilling rigs and other agricultural machineries and equipments; (2) To do any work conducive to better farming practices of the members; (3) To own or hire, processing plants like rice hullers, flower mills, oil crushers, decorticators etc., and improved machinery like Tractors and Machinery ploughs for the benefit of the farmers; (4) To own or hire godowns to provide facilities to members to store their produce for sale at good prices; (5) To manufacture oil engine pumpset, electric motors and other agricultural machineries like power tillers, thrashers and spare parts of other agricultural implements and accept job works such as manufacture of spare parts for oil engines pumpsets and other agricultural machineries, purchase and assemble spare parts and components required by its members, to open workshop service centres and inspection centres with a view to render assistance and service of all kings to its members[66]; (6) To act as agent for the government, Agro Industries Corporation, to manufacture agricultural machineries and carry on agency business of every kind relating to the its activities: (7) To under take subsidiary and allied industries, conducive to the development of agriculture; (8) To arrange for training facilities to the member artisans, workers and staff member, farmers and conduct training classes; (9) To under take research and such other activities which are conducive to the development of agriculture; (10) To establish Soil Testing Laboratory for testing soil samples of agriculture in its area of operation; (11) To construct water saving devices; and, (12) Generally, to encourage the habit of thrift and co-operation among the members and to undertake any other activity

for the benefit of its members. The turnover details of the Chengalpattu-MGR District Co-operative Agro Service Society Ltd., from 1973 - 74 to 1990-91 are shown in *Appendix - 19.*

Tamil Nadu Agro Industries Corporation

The Tamil Nadu Agro Industries Corporation was incorporated in the year 1966 with the objective of encouraging the industries which help the growth and modernisation of agriculture, animal husbandry, pisciculture, poultry farming and food processing industries[67]. This corporation is also rendering service to the farmers by supplying quality fertilisers of all varieties manufactured by reputed companies through a network of dealers. Availability and reasonable prices are ensured in serving the farmers. It has been formulating and distributing quality pesticides conforming to ISI standard, which are very popular with the farmers for its quality. It has taken up the distribution all popular makes of tractors and power tillers. This corporation sells all these farm machines with quality agricultural implements like cage wheels, cultivators, etc. To enable the agriculturists to maintain their machines in good condition, quality spare parts of reputed manufacturers are sold through a network of sales depots throughout Tamil Nadu. Quantum of fertilisers sold from 1980-1991 and agricultural implements sold from 1979-80 and 1990-91 are furnished *Appendices - 20 and 21.*

The corporation has set up a Regional Centre at Kancheepuram to look after the activities of the industries in the district. Besides this, a spare parts sales depot is run by the corporation at Kancheepuram. The corporation owns a centre-*cum* sales depot at Tiruvallur and a Sales depot at Madurantakam.

The corporation is manufacturing and marketing double refined Sunflower oil under the brand name, SUNOLA. This has become popular as a healthy cooking medium. In order to have direct rapport with the dealers and customers, the corporation has undertaken direct distribution from 1st April 1985[68]. The details of sale of Sunola edible oil from 1984-85 to 1990-91 are tabled in *Appendix - 22.*

Seed Certification

The Department of Seed Certification was started functioning from 24th October 1979 with headquarters at Coimbatore. This department is acting as an agency in implementing the schemes of Seed Certification in Tamil Nadu according to the provisions of the Seed Act, 1966, and rules framed thereunder in 1968. There are 11 offices of the Assistant Directors of Seed Certification in the state functioning under the control of the Director of the Seed Certification. The office of the Assistant Director of Certification for Chengalpattu-MGR district is functioning from May 1982-83 with headquarters at Madras[69].

Seed Certification is an intensive technical process which requires specialised man power. It begins with the verification of authenticity of Seed source and continues till tagging and sealing of the container. The objective of the department is to ensure the quality of seed materials to the farmer and to maintain a minimum seed certification standard. This department evolves superior varieties and hybrids through continuous experimentation. New breeding strains are produced for getting higher yields.

Activities of the department

i) This department certifies seeds of any notified kind of varieties; ii) outlines the procedure for submission of application and for growing, harvesting, processing, storing and labelling of seeds intended for certification till the end to ensure that the seed lot finally approved for certification is true variety and meets the prescribed standards for certification under the act and rules. It maintains a list of recognised breeder of seeds; iii) verifies upon receipt of an application for certification that the variety is eligible for certification, that the seed source used for planting is authenticated and the record of purchase is in accordance with these rules and the prescribed fee is paid; iv) takes samples of seed, inspects seed lots produced as per the procedure laid down by the certification agency and has such samples tested to ensure that the seed conforms to the prescribed standards of certification; v) inspects seed processing plants to see that the admixtures of other kinds and varieties are not introduced; vi) ensures that action at all stages *i.e.,* flied inspection, seed processing, plant inspection, analysis of samples taken and issued of certificates including tags, marks, labels and seals, is taken expeditiously; vii) carries out educational programmes designed, to promote the use of certified seed including a publication listing seed growers and sources of certified seeds; viii) grants certificates including tags, labels, sales, etc., in accordance with the provisions of the act and rules; ix) maintains relevant records that are necessary to verify that seed plants for the production of certified seed are eligible for such planting under these rules; and, x) inspects fields to ensure minimum standards for isolation, roughing as well as to ensure that the seeds are disease free[70].

This department implements seed certification, seed inspection, seed testing and training programmes.

a) Procedure for certification

For the production of quality seeds with genetic purity, physical purity and good germination, a series of quality control measures are adopted right from selection of variety, till it is processed and distributed to farmers. Thus, effective seed certification alone can ensure quality seed production. To ensure the minimum standards for certification, number of process like periodical inspection of seed farms, ensuring proper thrashing, winnowing, grading, sampling, processing, seed testing, etc., are systematically

undertakan. The seeds tested for their quality with genetic purity alone are certified.

b) Seed Inspection

For better yields, use of quality seeds is essential and this is realised by many farmers. High yielding varieties are brought under seed certification under 1966 Seed Act and certified seeds are distributed through Agricultural Department, co-operative institutions and through private agencies. Quantity of seeds distributed to farmers from 1980-81 to 1990-91 is shown in *Appendix - 23.*

c) Seed Testing

Four seed testing laboratories are functioning at Coimbatore, Dharmapuri, Madurai and Kudumianmalai. Seed samples of certified seeds, seed samples after seed inspection and service seed samples are tested in the laboratories. The seed samples are tested for physical purity, germination, other distinguishable varieties, quality, moisture content, admixture of other crops and weed seeds, etc.

d) Seed Certification Training

Training is imparted to seed certification officers and seed growers. The following five training programmes are conducted by the department:

i) Orientation training to seed certification officers; ii) Refresher training to seed certification officers; iii) Seed certification training to the agricultural officers of Agriculture Department and Horticulture Department in the seed certification; iv) Seed certification training for private entrepreneurs and seed growers; and v) Quality control training to the seed distribution agencies[71].

1. Manures

These are relatively bulk materials like animal or green manures, which are added mainly to improve the physical condition of soil, replenish and keep up its humus status, maintain optimum conditions for the activities of the soil micro-organism and make good a small part of the plant nutrients removed by crops or otherwise lost by leaching and soil erosion. The plant food elements contained in manures are released in an available from after the manure is applied to the soil and is decomposed by soil micro-organisms. Similarly, green manures add not only substantial amount of organic matter but also, nitrogen.

2. Fertilisers

These are inorganic materials of a concentrated nature; they are applied mainly to increase the supply of one or more of the essential nutrients such as nitrogen, phosphorus, potash, etc. Fertilizers contain these elements in the form of soluble or readily available chemical compound. In common parlance, the fertilisers are called 'chemical', 'artificial' or 'inorganic' manures[72].

Concentrated Organic Manures

Some of the concentrated materials, such as oil-cakes, bone-meal, urine and blood are of organic origin. The use of manures and fertilisers is complementary and not in substitution of one another. Quantum of manures, chemicals fertilisers distributed to farmers from 1980-81 to 1990-91 is given in *Appendix - 24*.

Seed Processing Units

In order to supply good quality seeds to the farmers, the seed processing units have been established at Kancheepuram, Kolandalore, Kattankulathur, Maduranthakam, Kunrathur, Sholavaram and Minjur[73].

The Seed Processing Units at Kancheepuram and Kolandlore are major units with a seed processing capacity of 1000 tonnes per annum. Each major unit is under the control of an Assistant Director of Agriculture. Others are mini seed processing units, each under the control of an Agricultural Development Officer. Annually, a quantity of about 2500 to 2900 M. tonnes of paddy seeds is required in the district for distribution to farmers by the Agriculture department. The cost of processing charges is borne by the Government[74].

Agricultural Extension Centres

There are 27 main agricultural depots and 36 agricultural sub-depots in the following places of the district[75].

Division (1)	*Main Depot* (2)	*Sub-Depot* (3)
1. Ambattur Division	1. Chitlapakkam 2. Puzhal 3. Villivakkam	1. Thiruvanmiyur 2. Madhavaram
2. Ponneri Division	1. Sholavaram 2. Minjur	3. Arani 4. Ponneri 5. Kolur
3. Gummidipoondi	1. Gummidipoondi	1. Pathirivedu 2. Kavarapettai
4. Tiruvallur Division	1. Ekkadu 2. Kadambathur	1. Kilambakkam 2. Manavalanagar 3. Perambakkam
5. Uthukottai Division	1. Ellapuram 2. Poondi	1. Vengal 2. Poochi Athipedu 3. Ponthavakkam 4. Pattaraiperumbudur

6. Tiruttani Division	1. Tiruttani 2. Thiruvelangadu	1. K.G. Kandigai 2. Kanagamma-chatram 3. Nemili
7. Pallipet Division	1. Pallipet 2. R.K. Pet	1. Puthathurpet 2. Chinnananga-poondi
8. Kancheepuram Division	1. Sirukaveripakkam 2. Wallajabad	1. Kalakattur 2. Parandur
9. Uthiramerur Division	1. Uthiramerur	1. Salavakkam 2. Thirumukkodal 3. Manampathy
10. Sriperumbudur Division	1. Sriperumbudur 2. Poonamallee 3. Padappai	1. Edayapakkam 2. Vellavedu 3. Kundrathur 4. Palanthandalam
11. Chengalpattu Division	1. Kattankolathur 2. Thirukalikundram 3. Thiruporur	1. Chengalpattu 2. Nerumbur 3. Manamathy
12. Madurantakam Division	1. Madurantakam 2. Acharanakkam	1. Bukkadurai 3. Perumbakkam
13. Cheyyur Division	1. Pavinjur 2. Chithamur	1. Cheyyur 2. Choonambedu

Pests, diseases and control measures

Seed-borne, soil-borne, and air-borne are major types of diseases.

Seed-borne diseases[76]

In the case of seed-borne diseases, the disease organism or its spores are carried either externally on the surface or internally within the seed. When it is external it may be destroyed by treating the seed with a chemical, *e.g.*, formalin, sulphur, copper car onate, organo-mercurials like Agrosan, Ceresan, etc. Except fermalin, all other chemical are used in dust form. The chemical is thoroughly mixed with the seed, preferably in a rotating drum, so as to cover the seed surface, with a layer of the powder. In the case of formalin, it is diluted with an equal quantity of water and sprayed ever a thin layer of seed. The seed is then heaped and kept covered with canvas overnight. For internally seed borne diseases, hot water treatment and solar heat treatment are very efficacious.

Soil-borne diseases

In the case of soil-borne diseases, the fungus living in the soil attacks the seeds or seedlings, the use of soil disinfectants or sterilizers, egg, formaldehyde, formasan, etc., is helpful in destorying the fungus.

Air-borne diseases

For protection against diseases caused by air-borne fungi whose spores alight on plant leaves or stems, the application of chemicals to the folia is the most effective of spores or kills the germ tube before it penetrate host tissue, if the spore had already germinated. Though many fungal and bacterial diseases can be controlled in this way, chemicals cannot control virus diseases. In their case, protective measures have to be indirectly aimed at controlling the insect vector or by use of disease free material for propagation, etc. The common diseases which generally affect the crops in the district and their control measures are tabled below[77]:

Rice

Insects which affect paddy crops are thrips, stemborer, greenleaf hopper, brown plant hopper, leaf folder, earhead bug etc. Common rice diseases are RTV, rice blast, Brown spot, sheath rot, sheath blast etc.

Insect pests	*Control measures*
1. Thrips	HBC 10 per cent or Endouslfan 35 EC spray
2. Stemborer	Phosphonidon or Monocrotophos
3. Greenleaf Hooper	Fenthion or Phosalone or Qudnalphos-er Endosulphan - Spray any one of these chemicals.
4. Brown Plant Hopper	Phosphomidan, Monocrotophes, Phosolone, BHC 10 per cent dust.
5. Leaf folder	Set up light traps spray any one of the chemicals Monocrotophes, quinalphos, carbary1 50 WP.
6. Earhead bug	Spray any one of the following chemicals Malathion four per cent dust, Carbaryl 10 per cent dust, Monocrotophos, Fenthion

Rice Diseases

1. RTV	Apply carbofuran or spray Monocrophos.
2. Rice Blast	Spray Corbendazim or Ediphenphes or Mancezeb

3.	Brown spot	Spray Edifenphes or Mancozeb
4.	Sheath rot	Spray Carbandazim or Mancozeb
5.	Sheath blast	Drench Carbandazim or captofol

Groundnut Pests

a)	Leaf Miner	Phosalone 4 per cent dust or Carbaryl 10 per cent dust.
b)	Red Hairy Caterpillar	BHC 10 per cent Dust or Quinalphos 1.5 per cent dust or Phosalone 4 per cent dust or spray Endosulfan or Fenitrothion.
c)	Pod Borer	Malathion five per cent dust or Endesulphan four per cent dust.
d)	Prodenia	Carbarly 10 per cent dust or Spray Carbaryl 50 WP or Quinalphes.

Gingelly

Shoot Weber	Phosolone or Quinalphos or Dichlorovos[78].

Disease Control

Groundnut

1.	Root Rot	Seed Treatment with Thiram or Mancozeb or Carbandazim.
2.	Rust	Spray Carbandazim or Moncozeb
3.	Tikka	Spray Carbandazim or Mancozeb

Gingelly

1.	Root Rot	Seed treatment with Thiram or Carbandazim.
2.	Powdery Mildew	Spray wettable Sulphur or Dust Sulphur
3.	Phyllody	Remove and destroy infected plants. Now, the TPM concept is followed to check the pest and disease attack.

It is based on the economic threshold level. *i.e.* Whenever the pest attack crosses the economic threshold level (ETL), the plant protection measures are taken.

Rice Pests[79]

Extensive survey of rice crops was conducted in the Chengalpattu - MGR district for the past 15 years. It has revealed that yellow stemborer, leaf-folder, earhead bug and thrips are the major pests affecting the crop, resulting in 20 to 25 per cent loss in the yield. Of late, gallmidge and black

rice bugs are emerging as major pest problems in the district. Rice GLH, vector of tungro, virus disease is prevalent although the year and three species, *viz.,* Nephotettix N.Virescens malavanus and N. Nigropictus have been identified, the predominant being N.Virescens. A critical survey has revealed the prevalence of two species of leaf folders *viz.,* Cnaphalocrocis medinalis and Marasmia patnalis. In sornavari season, C.Medinalas is the predominant species, while M.Patnalis dominates during Navarai season and a mixed population of both affect the Samba crop.

Studies on seasonal incidence of rice pests reveal that GLH, BPH, WLH, YSB, black rice but, and earhead but are highly phototropic, while gallmidge and leaf folder moths are least attracted by light. Extensive survey for the occurrence of rice diseases has revealed that the major devastating diseases that are prevalent in the district are blast, brown leaf spot, narrow brown spot, shealth blight, and sheath rot bacterial leaf blight. RTV was noticed in 1984-85 in IR 20 and CO 43. Among these, brown leaf spot is the very serious disease which causes considerable loss in the yield. This diseases can be effectively controlled by spraying Edifenphos at 750 ml/ha.

Control measures

Studies on the efficacy of 50 commercial formulation and mode of treatment have revealed the following:

1. Dry seed treatment with dimethoate 30 EC @ 2 ml/one kg. of seeds has effectively controlled whorlmaggot up to 80 days after seeding; 2. For control of early pests like Hispa whorlmaggot and gallmidge, soaking the seeds in water for 10 hours and then in a solution of 8 per cent Zinc sulphate + 0.1 per cent methyldemeton for 12 hours is very effective; 3. Nursery application of carbefuran 3G @ 1.4 KG/8 cents effectively controls GH and stemborer; 4. Spraying monocretophos @ 500ml/ha. on need basis effectively checks leaf folder infestation; 5. For control of yellow stemborer spraying phosphamidon @ 250 ml is found highly effective; 6. Basal application of 150 kg. neem cake per hectare followed by spraying five per cent neem seed, kernel extract on 30, 40 and 50 effectively; controls GLH, WBPH, gallmidge leaffolder and yellow stemborer[80].

Measures taken to control agricultural diseases

There is a Pest Surveillance Programme in fixed plots. Roving survey studies of pests is carried out by the Agricultural Extension workers based on the pest surveillance. Necessary plant protection measures also taken. Such pest monitoring scheme is carried out in consultation with the Scientists of the Tamil Nadu Agricultural University Tirurkuppam[81].

Cymbopogan coloratus that occurs in the billy reserve lands around Tiruttani in Tiruvallur range is burnt annually by graziers in summer to induce tender grass, their cattle. This repeated burning through ages coupled with

unrestricted felling of the tree growth has resulted in almost complete denudation and erosion of these hills. When nature, small quantities of this grass are exploited by the local villagers for batching purposes. The grass is injurious not merely because of the fire hazard that it poses but also because it saps the little nutrition in soil and physically obstructs regeneration[82].

Research Stations, Horticultural Farms, Soil Testing Laboratories, Agricultural School[83]

Rice Research Station, Tirur

A Rice Research Station at Tirur (Tirukkuppam) in Tiruvallur taluk was established in the year 1942 by the State Department of Agriculture with the aim of tackling problems confronted by the rice growers in the predominantly tankfed areas of Chengalpattu - M.G.R. district.

It is about 1.5 km, south of Sevvapet, railway station on the Madras-Arakkonam line. The station lies at 14° latitude and 80° longitude and is 39.47 metres above sea level. The area of the farm is 15.85 hectares.

Climate condition

The average annual rainfall for the past 10 years in 1060 mm, of which 423 mm, is received in the South-West monsoon and 503 mm, in the North-East monsoon, while winter and summer showers have contributed 134 mm.

The station was upgraded in 1974 with the addition of different faculties, namely, Plant breeding, Agronomy, Soil Science, Entomology and plan Pathology. It caters to the needs of the paddy growers in the districts of Chengalpattu-MGR, North Arcot-Ambedkar, Tiruvannamalai-Sambuvarayar and South Arcot where paddy is cultivated in three different seasons. The station has been brought under the control of the Tamil Nadu Agricultural University in the year 1981 and is headed by a Professor and Head. Nine improved strains (three hybridization and six by pure line selection) have been released from the station. They are TKM1, TKM 2, TKM 3, TKM 4, TKM 5,TKM 6,TKM 7,TKM 8 and TKM 9. Details of the improved strains released are as follows:

TKM 1 - This strain was released 1950 which was duration of 130 days. It gives 1.8 tonnes of grain yield per ha. It is suitable for growing during July-August sowing as rainfed crop. *TKM 2* strain was released in 1950 and it has a duration of 125 days. *TKM 3* strain was released in 1950 and is suited for May-June sowing and is of 105-110 days duration. *TKM 4* variety was released in 1950; it has a duration of 115 days and gives a grain yield of 2.7 tonnes per hectare which is 15 per cent increased yield over the local. It comes up well both under rainfed and irrigated conditions. *TKM 5* variety was released in 1952. It is suitable for sowing both in "Navarai" (December-January) and "Sornavari" (April-May) seasons. It has a duration of 110-115

days. *TKM 6* strain, which was released in 1952, is a short duration variety. *TKM 7* strain which was released in 1973, has a duration of 105-115 days. *TKM 8* strain was released in 1976 and is attaining maturity in 120-125 days and is raised in Samba season. *TKM 9* strain was released in 1978. It comes up well under wet conditions in Sornavari and Navarai seasons and under dry and semi-dry conditions in Samba season.

Germplasm bank

The Germplasm Bank consisting of 282 rainfed rices with 61 short duration and 221 medium duration types received from different sources are maintained for use as doners. Research on agronomical aspects of rice cultivation is in process from 1974, after the formation of a separate discipline at this station. Problems arising in rice cultivation in upland area of precarious and undependable monsoon rains and also in irrigated low land are studied. Under soil science, work was carried out to find out the soil deficiency of micro nutrients for raising rice crop.

Low Soil Fertility Scheme

The scheme was functioning from September 1983 to March 1990 at the station. The scheme has analysed the status of different soil types of the district and suggested remedial measures.

Experiment on Cultivators Field Scheme

The Indian Council of Agriculture and Research Scheme was functioning from 1986 to March 1991. In the fertilizer trials conducted in rice crop, urea super gradules (USG) and prilled urea on equal nitrogen basis have yield on par with the yield in sandy loam soils of the district. For getting the maximum yield in rice and groundnut, 100 per cent population and 100 per cent recommended fertilisation essential. Inter cropping pulse (Black gram T9) in groundnut has resulted with a bonus yield of 2-3 quintals pulses weedicide applied to groundnut resulted in highest yield of 23.7 quintals/ha.

Nematology Scheme

The nematology laboratory was functioning from September 1986 to March 1990 in the Station. Application of compost at 5.0 t/ha. reduces the three types of nematodes population in rice fields. Growing of pulses or brinjal after rice also reduces the nematode population checks the riceroots nematode population. Application of carbofuran at 2g/plant of vegetables, 5g/plant of Jasmine and 40g rhyzome of banana and per citrus tree reduces the nematode population.

Plant Clinic Centre

This plan scheme is functioning from september 1986 onwards in the station. Scientists have identified a new pest called 'psyllid' on subabul and suggested spraying of monocrotphos 2 ml/ or phosalene 3 ml/lit, for control.

Bacterial wilt disease was identified in tomato and brinjal and the soil born disease is controlled by crop rotation of non-host crops. Soft rot of Banana was identified and controlled by administering 100 ppm plantomycin/tree. A demonstration was performed in the recent past, for the control of "Panama Wilt" of Banana by Capsule application of Carbendazim, successfully.

State Horticulture Farm (Cashew), Pitchivakkam

Initially, a State Seed Farm was started on 16 July 1963 in an extent of 92.5 acres of Government land by the Agriculture Department. Subsequently, a coconut nursery was formed in the farm in an area of 7.5 acres, on 1 June 1968. Due to unforeseen circumstances, the seed farm did not function efficiently with the result,the entire 92.5 acres was transferred to the Horticulture Department and the farm was converted into a Cashew Progency Orchard on 1 Nov 1975. The objective of the farm is to identify the high yielding varieties of cashew crop and arrange for further multiplication. The cultivable area of the farm is 85.0 acres and 7.5 acres form roads and Pathways. The farm is under the control of an Assistant Agricultural Officer while Cashew Development Scheme is supervised by the Horticultural Officer[84].

State Horticultural Farm, Melkathirpur

This farm was taken over by the Department from State Farm Corporation in the year 1987. Total area of the farm is 42 hectares. of which 10 hectares are under cultivation. The fruit plants like cashew, Jack, etc., are produced in the farm. The total production is around 10,000 plants.

State Horticultural Farm, Melottivakkam

This farm was taken over by the Department from State Farm Corporation in the year 1987. Gross area of the farm is 20.36 hectares. of which 17.96 hectares are under cultivation. Mango, Coconut, Guava are the main crops in the farm.

State Horticultural Farm, Vitchanthangal

This farm was taken over from State Farm Corporation in the year 1987. Total area of the farm is 22.96 hectares. of which 10.05 hectares are under cultivation. Ornamental plants and fruit plants are produced in this farm. Number of plants produced is around 20,000.

State Horticultural Farm, Madhavaram

This farm was started in the year 1980, in an area of 33.04 acres. Of this, 1.20 acres are cultivated. Total production is 50,000 plants. Ornamental plants are produced in this farm[85].

State Horticulture Farm, Athur

The State Horticulture Farm was started during 1960-61 in an area of 12.244 hectare with 11.920 hectares under cultivation and the remaining area covered by roads and buildings. The farm is situated at 4 km. from Chengalpattu on the Kancheepuram road. The farm serves as a model orchard and provides employment opportunities to those in the nearby villages. It produces various planting materials like fruits, economic plants and ornamental plants. The farm is under the control of the Horticulture Officer. Area covered under various horticultural crops is as follows[86]:

Mango is grown in 6.196 ha., Sapota is raised in 1.480 ha., Guava in 0.870 ha. and other fruit crops in 0.600 ha. Miscellanous crops and nursery are grown in 0.304 ha. and 2.450 ha. respectively.

Coconut Nursery, Madhavaram Milk Colony

Coconut Nursery at Madhavaram was started in the year 1971 in an extent of 10.48 acres. This farm produces only hybrid coconut seedlings. It produces one lakh seedlings per year to meet out the needs of the Chengalpattu-MGR district farmers. It produces Tall and Dwarf seedlings. It comes for bearing after four years and has the life time of 60 years. The cost of a seedling is Rs.10.50 lp. The Nursery is under the control of the Department of Agriculture. There is another coconut farm at Pitchivakkam near Tiruvallur. It produces Tall Variety only. There is a mother palm at Putlur[87].

Government Seed Farm, Kancheepuram

Seed is the basic input for cultivation. So as to say, good quality seeds are the main ingredients for achieving good yield. Realising the importance of seed requirements, the Government of Tamil Nadu established a seed farm at Panchupet near Kancheepuram in 58.76 acres. The farm was started on 2 February 1962. It is situated about one kilometre away from the Arulmigu Ekambaranathar Temple. The farm produces foundation paddy seeds of good qualities. About 20 per cent of the requirements of paddy seeds for the agriculturists of the district are met from this Government Seed Farm. The quality of seeds produced in the farm is checked by the Seed Certification department. The farm holds wet lands to the extent of 58.76 acres, dry lands the extent of 4.65 acres and *kuttai* lands in and area of 11.78 acres.

Seed production particulars from 1985-86 to 1989-90 are shown in the following table[88]:

Sl. no.	Year	Total cultivable area (in acres)	Paddy Cultivated area (in acres)	Total Produce harvested (in Kilos)
(1)	(2)	(3)	(4)	(5)
1.	1985-86	74.38	70.43	67558
2.	1986-87	61.93	57.65	79468
3.	1987-88	27.63	27.63	27792
4.	1988-89	20.70	19.60	19727
5.	1989-90	22.15	16.40	14347

The seed farm earned profit during the years 1985-86, 1986-87, 1987-88 and 1989-90. The total income realised and expenditure incurred for the period from 1985-86 to 1989-90 are shown below[89]:

Sl. no.	Year	Total Income	Total Expenditure	Profit	Loss
(1)	(2)	(3)	(4)	(5)	(6)
1.	1985-86	358232.30	356812.80	1419.50	....
2.	1986-87	375109.00	347998.00	27111.00	....
3.	1987-88	260873.65	259461.75	1411.90	....
4.	1988-89	233307.00	241007.00	...	7700.00
5.	1989-90	379730.00	373697.00	6505.30	...
	Total	1607251.98	1578976.55	36447.70	7700.00

Soil Testing Laboratory, Kancheepuram

The Soil Testing Laboratory is functioning 1966 at Kancheepuram with a capacity to analyse 84,000 samples per year. It is under the control of and Assistant Soil Chemist who is assisted by 14 Agricultural Officers (Research). Its objectives are briefed hereunder[90]:

1. Assessing the soil fertility status of the individual farmers of the Chengalpattu-MGR. district; 2. Site and situation specific fertility for increased agricultural production based on soil tests; 3. Refining fertiliser recommendations based on soil fertility evaluation trials in farmers' holdings; 4. Inventory of basic resources information at village, taluk and district level for efficient planning on soil fertility, and management for increased agricultural production; 5. Assessing soil problems - Alkalinity, Salinity, acidity and advising

reclamatory measures; 6. Assessment of Micronutrient status of the soils; and 7. Assessment of quality of water meant for irrigation and preparation of water quality maps.

Achievement of the Soil Testing Laboratory from 1966 to 1991 is tabled in *Appendix - 25.*

Mobile Soil Testing Laboratory

To augment and strengthen the soil testing programme in the Chengalpattu-MGR district, a Mobile Soil Testing Laboratory is functioning in January 1980. It is under the control of one Assistant Agricultural Chemist and three Agricultural officers. The laboratory has the capacity to analyse 18000 samples per year. The achievement of the Mobile Soil Testing Laboratory from 1980-81 to 1990-91 is shown on the *Appendix - 26.*

Pesticides Testing Laboratory, Kancheepuram

Tamil Nadu is in the forefront even before the enforcement of the Insecticides Act 1968, by starting first Pesticides Testing Laboratory in 1962 at Coimbatore. The Pesticides Testing Laboratory at Kancheepuram started functioning from 1 December 1969, by the Department of Agriculture. At present, it caters to the needs of the Chengalpattu-MGR district and part of South Arcot district. The analytical capacity of this laboratory is 1440 numbers of pesticides check sample per annum. The samples are received from the Chengalpattu-MGR district and part of South Arcot district. The Insecticide Inspectors of the Department of Agriculture collect, check samples from the retail shops, manufactured sites, agricultural depots agencies, etc., under the provisions of the Insecticides Act 1968. Private samples are also analysed, on collection of the prescribed fee of Rs.300/- per sample. The laboratory is headed by an agricultural chemist with supporting staff, consisting of four Agricultural Chemist with supporting staff, consisting of four Agricultural Officers and enough Laboratory Assistants. The Pesticide check samples received, are tested by the agricultural officers by employing sophisticated instruments. The routine analytical methods involving volumetry, gravimetry, gas absorption colorimetry, etc., are adopted.

Besides the chemical analysis volume/mass of the pesticide packing, physical tests such as acidity, sieving, Wettability, suspensiability, granulation, etc., are also tested. The pesticides check samples which are conforming to the specification of Indian Standards, are declared as *Standard.* Penal action are initiated against the misbranded chemical manufacturers. More than 10, not covered under Bureau of Indian Standards and also tested in the laboratory.

Achievements in Analysis

Between 1970 to 1990-91, there were 35603 samples received, of this 29218 samples analysed and 27677 samples were found 'standard' and 1541 samples were found 'non-standard'.

The achievement of the Pesticides Testing Laboratory from 1970-71 to 1990-91 is tabled in the *Appendix - 27*.

Fertiliser Control Laboratory, Kancheepuram

A Fertiliser Control Laboratory is functioning at Kancheepuram since 1984 with an analytical capacity 2000 numbers fertiliser check samples per annum. The object of this Laboratory is to analyse the Fertiliser check samples under the provisions of the Fertiliser Control Order 1985 and Essential Commodities Act 1955 and to detect the spuries and Non-Standard Fertiliser in trade and initiate penal action on traders at fault through filling of cases in Criminal Courts. It achieves the distribution of standard quality of fertiliser under the quality control programme of fertilisers for the farming community for getting higher yield. The laboratory is under the control of the Agricultural Chemist who is assisted by five agricultural officers and other supporting staff. This laboratory receives the fertiliser check samples from the agricultural divisions of three districts, *viz.*, Chengalpattu-MGR., North Arcot Ambedkar and Tiruvannamalai Sambuvarayar. The details of target and achievement of the laboratory from 1984-85 to 1990-91 are tabled below[91]:

Sl. no.	*Year*	*Total number of samples analysed*	*Number of samples found "Standard"*	*Number of Non-Standard Samples*	*Percentage of Non-Standard Samples*
1	*2*	*3*	*4*	*5*	*6*
1.	1984-85	538	483	55	10.22
2.	1985-86	1793	1214	579	32.29
3.	1986-87	2008	1777	231	11.50
4.	1987-88	2008	1616	393	19.57
5.	1988-89	2002	1541	461	23.03
6.	1989-90	2006	1569	437	21.79
7.	1990-91	2008	1871	137	6.82

Farmers Training Centre, Kancheepuram

The Farmers Training Centre at Kancheepuram is functioning from 14 September 1976 with the object of imparting training to farming community on the latest farming techniques, use of farm equipments and agricultural in puts and also proper utilisation of water. The centre acts as a source of information in respect of agricultural operations. Training on various fields such as, agriculture, animal husbandry, sericulture, farm forestry, horticulture and agricultural marketing is imparted. Regular village level training is given to 25 elite farmers of each panchayat union for three days on various fields. A sum of Rs.30/- is paid to each participant to meet their incidental expenses

at the rate of Rs.10/- per day. Such training is offered to the farmers of 27 panchayat unions in the district at the rate of one training in each block per yer. About 275 men and equal number of women are trained in each year in the block headquarters[92]. Demonstrations on the use of agricultural inputs and innovative methods of application are also conducted during the period of training. Farmers Discussion Groups are formed in each village under the leadership of elite farmers who are conveners of the discussion groups. The conveners are given specialised training on latest agricultural production techniques for two days on an average of 25 conveners per camp. About 125 conveners are trained in a year and a sum of Rs.20/- is paid for participation during the training period. One day demonstration training programme is held in the farmers field. Improved farming practices are demonstrated in the fields in the presence of a group of farmers and nearly 10 field demonstrations are conducted per year in the district. A monthly magazine called "Uzhavar Nanban" is brought out by the centre. The various training programmes conducted by this centre and new technologist in agricultural production are flashed through All India Radio, Madras, for the benefit of the farmers of the district. An agricultural education tour of conveners and members of farmers discussion group is arranged every year. They are taken to various agricultural research centre, cattle and poultry farms, etc., and with the knowledge gained during the tours, they are motivated to adopt the latest technologies and improve the agricultural products. Farmer's Day (Kissan Mela) is celebrated each year and modern techniques are highlighted in the forum. The farmers training centre also functions at a centre of Information Bureau for the Welfare of the farmers in the district. The centre is running an Agricultural School at Kancheepuram. The activities of the school are dealt with below[93]:

Agricultural School, Kancheepuram

The agricultural school was started on 9 July 1962 in the State Seed Farm at Sirukaveripakkam. The school imparts education to the children of the agriculturists belonging to the Chengalpattu-MGR district with the object of adopting modern and scientific method of cultivation in their farm. The school is under the control of an Agricultural Officer. So far, the school had been admitting children who had completed 8th standard. From 1991-92 onwards, children who have passed 10 standard alone are eligible for admission in the school. The applicant must have acquired two years experience in the agricultural operations and also must come under the age-group of 18 to 30 years. The training period is one year from September to August. A sum of Rs.100/- per mensum is paid to the trainees as food allowance. Initially, it was under the control of the District Agricultural Officer and from 1 April 1977 it is under the control of the Deputy Director of Agriculture (Farmers Training Centre) Kancheepuram. The School is functioning in the State Seed Farm[94]. Training is imparted on agriculture and

allied sectors such as paddy cultivation, oilseeds crops, millets, sugarcane, horticulture crops and agricultural marketing. Subsidiary occupations include dairy development, cattle development, poultry, piggery, bee-keeping, sericulture and forest development. Particulars regarding the sanctioned strength, number of students actually joined, number of students passed etc., are tabled in the *Appendix - 28.*

Krishi Vigyan Kendra

India needs to build up at the rural level, structurally and functionally, a microscopic replica of what the Agricultural University system provides at the state level. Such institution is called Krishi Vigyan Kendra which operates in areas of a) adaptive research and demonstrative of the latest agricultural technology; b) practical vocational education to farmers; and c) an effection agro-service. The Krishi Vigyan Kendra functions in co-operation with State Department of Agriculture and other forums such as district administration and the agencies providing agricultural inputs - banks, co-operative marketing and banking societies[95].

Krishi Vigyan Kendra, Kattupakkam

The Farm Science Centre was established in the Livestock Research Station Campus, Kattupakkam on 1 June 1985. This centre imparts skill training in Agriculture, Livestock, Horticulture, Home Science etc., with a view to inculcate the habit of mixed farming in the minds of weaker sections in rural areas. The objectives of the Farm Science Centre are as follows[96]:

i) Planning and conducting production oriented, need based short and long duration training courses both on campus as well as in the villages (off campus) for various target groups with priority on the weaker and the poor sections of the society in agriculture and allied activities on mixed farming; ii) Developing and Organising non-formal educational programmes by way of field days, farm visits, farmers fair, radio talk, farm science club, etc., as a follow-up information to training course; iii) Organising Farm Science clubs in rural areas in order to have personal involvement of the younger generation, on agricultural and allied sciences; iv) Developing and maintaining the demonstration Units on Scientific lines as the facilities for providing work experience to the trainees and also disseminating the latest technical know-how; v) Providing practical training facilities to teachers and students of the Higher Secondary Schools with agriculture as vocational Subject; and, vi) Implementing all such schemes of the Indian Council of Agricultural and other related organisations which intend to strengthen the training programmes of the Krishi Vigyan Kendra (in order to increase economic growth) which are most likely to give major benefits to weaker sections of the society.

Details of training programmes organised from 1985-1991 are tabled below

Sl. no.	*Activities*	*Number of Trainings conducted*	*Number of beneficiaries*		
			Male	Female	Total
1	*2*	*3*	*4*	*5*	*6*
I.	*On Campus -*				
1.	Agriculture	130	2592	424	3016
2.	Horticulture	74	885	634	1519
3.	Animal Husbandry	164	2029	621	2650
4.	Agricultural Engineering	23	314	56	370
5.	Fisheries	39	410	165	575
6.	Others	16	652	54	706
II.	*Off Campus -*				
1.	Agriculture	180	5136	910	6046
2.	Horticulture	83	1668	1146	2814
3.	Animal Husbandry	59	1054	587	641
4.	Agricultural Engineering	38	883	14	897
5.	Fisheries	11	125	17	142
6.	Others	11	535	63	598

On Campus

In the 'On Campus' training, the training programmes on rice production, oilseed production, pulses production, forage crop production, vegetable cultivation, fruits and flowers cultivation, kitchen gardening, mushroom cultivation, agricultural implements for crop cultivation and water management, fish production in fresh water and brakish water, fish processing and livestock management like poulty, dairy, rabbits and piggery rearing were conducted in the Krishi Vigyan Kendra Campus for the trainees.

Off-Campus

Off Campus training are conducted in various villages of this district. The training programme is only for one day. The training is mostly in crop production aspects, and the Livestock management. Depending upon the season, the cultivation aspects of paddy, groundnut, pulses, vegetables, fruits and flowers vary as dry crops or irrigated crops. Between 1985 and 1991,

425 method demonstrations have been conducted for the benefit of 679 farmers on various fields, *viz.*, seed treatment, herbicide application, agricultural implements operations, pruning of fruit trees, processing of fruits, deworming, debeaking, prawn pickle making etc.

Institute of Hydraulics and Hydrology, Poondi[97]

The Institute of Hydraulics and Hydrology, Poondi, is a wing of the Tamil Nadu Public Works Department. This was established as an Irrigation Research Station in the year 1945 below the Poondi Reservoir, otherwise known as "Sathyamurthy Sagar". The Irrigation Research Station registered a quick rate of growth both in the development of physical infrastructure facilities and in evolving solution for technical problems in hydraulics connected with various projects, mainly Irrigation Projects in the State through modelling techniques. This Irrigation Research Station was upgraded and named as Institute of Hydraulics and Hydrology in 1973. The Institute has entered into the realms of analytical techniques, mathematical modelling, computerisation, photographic interpretation and remote sensing.

The Institute has the following facilities

1. Right Flank Laboratory Area (42,000 Sqm.); 2. Left Flank Laboratory Area (98,000 Sqm.); 3. High head tanks for studies on vibration in sluice gates; 4. Cavitation tank for studies under sub-atmospheric conditions; 5. Electronic Laboratory; 6. Research Library with over 25,000 technical books; 7. Reprographic Section consisting of photography and reproduction, binding section and a small printing press; 8. Workshop and carpentry for manufacturing the requirements for model construction; 9. Exhibit section for preparing the relief models; 10. Glass flumes for flow studies in atmospheric pressure; 11. Fully furnished weather station; and 12. Data Bank for storing Hydrological Data.

Research Programmes

Research connected with the hydraulics of flow has been the main activity in the Institute from the very inception. Studies utilising modelling techniques and hydraulic similtude are conducted to find hydraulically efficient and economical solutions for-

a) Energy dissipation below dam spillways, sluices, barrages and anicuts; b) Discharge characteristics of spillway profiles and weirs; c) Inlet and outlet transition for the sluices in dams; d) Cavitation free flow conditions in sluices in dams; e) Vibration free high head gate operations; f) Uplift pressure below anicut floors and seepage studies using electrical analogy models; g) Silt exclusion studies in canal heads; h) Fluming and transition in canal heads; i) Canal chutes in place of drops; j) Canal lining; k) Bank erosion protection works; and l) River training works.

The studies in the Institute also include the studies on Sedimentation surveys in selected reservoirs and its watershed studies. The following are some of the important studies being conducted in this Institute:

1. Discharge characteristics of Tamarapakkam hand sluice, upper supply channel and lower supply channel;
2. Evolving remedial measures against pronounced sea erosion in North of Madras Harbour along Royapuram Coast;
3. Flood protection works in Adayar River; and
4. Prototype studies of the design of Automatic falling shutters for Madurantakam High Level Canal.

Research in Hydrology is another area where considerable work has been done in the Institute. Ten automatic rainfall stations in Kosathalayar Basic are maintained by this Institute and data are being collected periodically and recorded. A typical weather station has been established in this institute. Beach erosion problems are studied in coastal models in trays equipped to generate waves and tides and solutions for hore protection through groynes, sea walls and off-shore breakwaters devised.

Coastal Processes Studies along the Coast of Tamil Nadu

Erosion in coastal areas occur on account of various marine forces such as wind, wave, currents, tides and storm action on the shore. Considering the importance of the problem and the need for collection of long term data on the subject, the Central Board of Irrigation and Power financed the study of Littoral drift and coastal erosion, under fundamental and basic research applied to river valley projects during the III Five Year Plan period. Subsequently, the study is being continued out of the State Funds.

Animal Husbandry

Cattle are the mainstay of the agriculturists. From time immemorial, animal husbandry along side agriculture, has been playing an important role in the lives of the people of the world, particularly more in our country[98]. A vast majority of our people, live in rural areas and they mainly depend on agriculture and animal husbandry sector for their livelihood. The role played by the Animal Husbandry in the economic development of the country is quite substantial. The livestock health of the country has been contributing the valuable livestock products such as milk, eggs, meats, etc., for the consumption of people. Integration of animal husbandry with farming is essential for the fuller utilisation of farm by-products, maintenance of soil fertility, fuller employment throughout the year and increase in rural income[99].

Animal Husbandry developmental activities have made rapid strides in recent times, and have formed an essential part of such special schemes like special livestock production programme. Intensive Cattle Development

Project, Key Village Scheme etc., which induct superior germ plast in livestock. Veterinary hospitals and dispensaries, artificial insemination centres, key village blocks, cattle farms, poultry farms and shop farms are given due importance in the five year plans. Chengalpattu-MGR district is the one within agricultural base. Irrigation facilities are fairly good and livestock farming has been traditionally sound. The livestock census figures of the district as per 1982 census are tabled below[100]: The total cattle population 7,09,109; buffaloes 2,73,645; sheep 2,46,848; goats 2,51,735; pigs 1,941; domestic dogs 7,110; other livestock 2,683; and the poultry is 11,01,918.

Sheep Breeding

Sheep breeding is one of the important aspects of livestock farming in the district. A large number of farmers are engaged in rearing sheep and quality of animals is also very good. The common breed available is "Madras red". The farmers of the district have formed themselves into co-operative societies. In 1987, there were 97 sheep breeding co-operative societies in the district. The co-operative sqcieties help the farmers in getting financial assistance from banks, subsidy from government and also in marketing their produce. There is a large demand for sheep in the district becasue of its close proximity to Madras City and there is good scope for supply of meat from Madras to Anthaman.

Poultry

Chengalpattu-MGR district, poultry farming is popular. The belt area from Madras to Mahabalipuram enroute Adaiyar is concentrated in poultry units. There are two major hatcheries in the private sector and one hatchery in the public sector in the district. Private hatcheries produce high-breed chicks for commercial purposes, while the hatchery in the public sector is engaged in the production of pure line chicks for supply to poor farmers under various developmental schemes of the government. The poultry units rear both layers and broilers and there is very good demand for broiler in the metropolitan city of Madras.

Health cover to animals

The district is well afforded with infrastructure facilities for providing necessary health cover to animals. There are two clinician centres, 41 veterinary dispensaries, four veterinary hospitals and 188 sub-centres in the district to provide assistance to farmers in the shape of health cover and facilities for breeding.animals. These veterinary institutions carry out periodical preventive vaccinations against infections and contagious diseases and thus ensure proper health cover to the animals. Qualitative improvement of livestock is assured by Artificial Insemination done in the various centres, Frozen semon technology has also been introduced in the district[101].

Livestock Research Station, Kattupakkam

This Research Station is functioning under the administrative control of Tamil Nadu Agricultural University. It is engaged in livestock research in various aspects such as nutrition, breeding, disease control etc. It conducts trials in cross breeding of sheep. Imported varieties of Dorsot Rams are crossed with indigenous breeds of sheep like Mandiya, Machery, Madras Red, etc. A training centre is also functioning at Kattupakkam. It imparts training to farmers in various aspects of livestock farming, disease control, etc. The activities of the farm are dealt with in detail in this chapter under the sub-head "Kattupakkam Animal Husbandry Control".

Co-operative Poultry Farming in the district

With a view to improving production and marketing eggs by co-operatives, the government sanctioned in a scheme for being implemented by the Madras Co-operative Milk Supply Union[102]. The Milk Supply Union was arranging for sale of Milk supplied by over 100 milk supply societies in Chengalpattu-MGR district in and around three main routes leading to Madras City from Singaperumal Koil, Kilacheri, and Kunnathur. As the union was sending its lorries and milk vans to the villages for collection of milk, it was selected as the agency to implement the poultry, development scheme, as it could easily collect eggs also. The scheme was introduced in June 1950 in the following three stages:

(1) Collection of eggs of members of selected milk supply societies in the milk vans and marketing them at Madras through milk depots and through two salesmen employed for the purpose; and (2) Improving the country breed of poultry by introduction of exotic breeds purchased from Government Poultry Research Station.

(3) Introduction of hatching by incubators collection

A Senior Inspector of co-op. societies working under the Deputy Registrar of co-op. societies, Madras was supervising the working of the scheme and the Government sanctioned the appointment of three egg collectors and two egg salesmen each on a monthly pay of Rs.50/-. The Senior Inspector and the three egg collectors were imparted training in poultry farming at the Government Poultry Research Station, Madras. 18 milk supply societies, six in each of the three routes *viz.,* Kilacheri, Kunnathur and Singaperumal koil implemented the scheme at the first instance. Usually, the president or one of the office bearer of the Milk Supply Society was appointed as the agent of the Union. The egg collectors having headquarters at Singaperumal koil, Kilacheri and Amarambedu, arranged for the procurement of eggs. The eggs were placed in wooden boxes with sawdust, bran, paddy husk, etc., and sent in the milk vans of the Union. The egg saleman at the Madras Co-operative Milk Supply Union took delivery of the eggs, candled them in a powerful hooded light for quality, grade and stamped

the name of the Madras Milk Supply Union on them. Spoiled eggs were rejected and returned to the supplying agents. The Madras Milk Supply Union arranged for sale of eggs at milk depots and through the two salesmen at the doors of customers. In the second stage of the scheme, cocks of exotic breeds were supplied to improve the breed of the country fowls and government sanctioned a sum of Rs.1,650/- for purchasing exotic cooks. A sum of Rs.1,000/- was contributed by the Madras Milk Supply Union for the purpose. The country cooks surrendered by the members in lieu of the exotic cocks received, were brought to Madras and sold in order to weed out gradually the country cocks in villages where the scheme was implemented. Naturally, the price of fowl had increased in the villages and graded poultry had come into existence on account of the introduction of second stage of the scheme. Great care was however taken to prevent and arrest the spread of poultry disease. The dairy officer, who was rendering veterinary aid to the cattle of the members of milk supply societies was also treating poultry diseases[103].

The working of the third stage of the scheme contemplated artificial hatching of eggs. Government sanctioned a sum of Rs.1,500/- for purchase of and repairs to incubators. The incubators purchased at a cost of Rs.995/- and three old incubators of Madras Milk Supply Union got and repaired, were made use of. Eggs were received from members of the Milk Supply Societies free of cost and they were loaded into the incubators for hatching. The eggs were loaded once a month. Hatching was not conducted during the summer months. Eggs loaded were condled on 7th and 14th day of setting. Chicks were raised, by artificial hatching at 16 settings and distributed to members who supplied eggs for hatchings. They were fed and looked after for a fortnight in the centres, which were provided with coups and runs and foster mothers to rear the chicks. A sum of Rs.20/- per hatch was incurred at each towards maintenance charges in running the incubator. The cost of the scheme was met by the government with the contribution of 1,000/- of the Madras Milk Supply Union towards purchase of birds. The Madras Milk Supply Union was giving advances to agents, for purchase of eggs. The scheme, besides improving production of eggs, was providing and additional source of income to members of the milk supply societies. The Tamil Nadu Poultry Development Corporation Limited, Madras, has undertaken *inter-alia,* production, processing, storage and sale of poultry products. The activities of this corporation are explained in detail, under the sub heading TAPCO.

The Tamil Nadu Poultry Development Corporation Limited (TAPCO)[104]

The Tamil Nadu Poultry Development Corporation Limited popularly known as TAPCO is a Government of Tamil Nadu undertaking. The main objectives of the corporation are. 1. Production, processing, storage and sale of poultry products, poultry feed, equipments etc., 2. Providing various services, supplying inputs and rendering all kind of assistance to Poultry

farmers, and 3. to organise in the production, procurement, transportation, distribution, marketing, sales, import and export of poultry products of feed equipments.

The corporation has a marketing unit in Chengalpattu which is functioning from 1973. Besides the marketing activities, the unit is also implementing the scheme activities which generate additional opportunities for productive employment to the weaker section of rural areas and increase the income of poor farmers of the district. TAPCO implements the centrally sponsored poultry production programmes *viz.*, Special Animal Husbandry Programme, Special Componant Plan, Integrated Rural Development Programme, and Special Livestock Breeding Programme. There are three retail outlets functioning at Chengalpattu, Kalpakkam and Mamallapuram. The first two were started in 1978, while Mahabalipuram outlet was started in 1979. There is one hatchery at Chengalpattu started in the year 1989, which is engaged in the production of Japanese quails. During 1989-90, 57,130 and in 1990-91, 62,496 Japanese quails were produced.

The TAPCO marketing unit caters to the needs of sub-urban areas *viz.*, Mahabalipuram, Kancheepuram, Chengalpattu etc., by supplying eggs, live birds and meat at a competitive rate. TAPCO has also established a poultry equipment fabrication plant in the district during the year 1989. The sale proceeds of the TAPCO marketing unit Chengalpattu is tabled in *Appendix - 29.*

Livestock Research Station, Kattupakkam

The Livestock Research Station was established on 12 September 1957 at Kattupakkam. It is a composite farm consisting of cattle, buffaloes, sheep, goat, swine, rabbit and agricultural section. It is situated at about 45 km. south of Madras city on the Grand Southern Trunk road. The Research Station is situated in an area of 616.72 acres. Areas under irrigation and under rainfed condition are 46.86 acres and 179.95 acres respectively. The area under cultivable land in 346.34 acres. Area occupied by roads and buildings constitutes 43.57 acres[105].

The objective of the Research Station are : (i) to meet the educational feeds of the Veterinary faculty of Tamil Nadu Veterinary and Animal Sciences University; (ii) to undertake Research in livestock production; (iii) to serve as a training centre for farmers and field workers; (iv) to serve as a nucleus farm for production and distribution of superior germ plasm; and (v) to serve as a demonstration unit.

As on 1 August 1992, there were 278 cross breed cows, 30 murrah, 49 surti and 26 local buffaloes. Sheep include Dorset, Madras Red, Gross and Mandya. Ther were 312 Madras Red, 36 Gross, 25 Mandya; there were 105 goat, 70 swine and 360 rabiit in the research station.

The activities of the Research Station

The research station comprises cattle and buffaloes section, swine, sheep, rabbit and agriculture sections.

(1) Cattle and Buffaloes Section : A nucleus herd of 100 breedable cross breed cows with 50 per cent Jersi inheritance is maintained for production and distribution of cross bred bulls and to undertake research programmes on cross bred cattle. A herd of Murrah (50 breedable age she buffaloes) is maintained for production and supply of breeding bulls and for undertaking research programme on buffaloes. Surti bred buffalo is tested for its suitability as improved breed in the State. A herd of Yorkshire pig is maintained for production and supply of breeding stock in the swine station. A nucleus breed of Madras Red Sheep is maintained and an open nucleus breeding scheme is operated to improve Madras Red Sheep in its breeding tract. A small herd of Mandya breed of sheep and dorset crossbred are maintained for research purposes in the sheep section. Exotic varieties of broiler rabbits are under selective breeding and seed stocks for the rabbit breeding are supplied by the rabbit section.

Improved varieties of fodder such as C01; C02; M.B.21, Paragrass; Geinea grass; Neelakolkatti grasses legumes such as Cowpea (Paiyur 1 and C_O5), Subabul and Desmanthus are raised and distributed to farmers in the agriculture section[106].

Farmers Training Centre

A farmers training centre is functioning at Kattupakam from 4 January 1980. The training centre provides latest technical knowledge about livestock and poultry farming to the farmers. It solves practical problem of livestock & poultry farmers. It acts as a two way channel between the farmers and the laboratory. The centre is under the control of a Professor & Head with supporting staff. Activities of the Farmers Training Centre from 1985-86 to 1991-92 are tabled in *Appendix - 30.*

Common disease found among cattle population

This district is said to be endemic for Black quarter and Heam-orrhagie Septicalmia in cattle and Entrotoxemia in sheep. There has been stray incidence of Anthraxe and Foot and Mouth, Rinderpest cattle and sheep in the district. The health cover to the animals in the district is provided by the various veterinary institutions.

The Animal Disease Intelligence unit is functioning at Kancheepuram and this unit undertakes investigation of disease of livestock. Special teams headed by veterinary surgeons to protect animals against Rinderpest are operating at Ponneri, Kancheepuram and Tiruttani. These units keep a close watch on inter-state movement of animals and also protect animals entering the State against Rinderpest[107].

The qualitative improvement of cattle in the district has been hastened by the establishment of Intensive Cattle Development Project in Tambaram. This project provides comprehensive assistance to the farmers in breeding of animals and provides health care. Importance is given to fodder cultivation in this area and the farmers are assisted in various ways for development of fodder plots which helps in curbing cost of food of the animals and thus improves the income from the dairy farming. Improvement of quality of sheep is ensured by encouraging farmers to get better variety of rams from livestock farms.

Centre for Animal Health Studies

The Centre for Animal Health Studies (AHS) is a unit of Tamil Nadu Veterinary and Animal Sciences University (TANUVAS).The centre is associated with education, research and extension activities pertaining to animal health. The Office of the Director of Centre for Animal Health Studies with the following attached units were shifted to Madhavaram in the Chengalpattu-MGR district during June 1991[108]:

(1) Veterinary Biological Research Centre comprises - Vaccine Research Centre-Viral Vaccine and Vaccine Research Centre-Bacteria Vaccines

(2) University Dairy Farm, (3) Experimental Animal Unit, (4) Operation Research Project in Fish culture, (5) Scheme for Fisheries Extension.

The Madhavaram campus has the following infrastructure facilities for animal experimentation. (1) Animal sheds for health animals infested; (2) Animals and vaccinated animals; (3) Laboratory facilities for Bacteriology and virology work; (4) Postmortem facilities with incineration; (5) An experimental unit of the unvaccinated animals; (6) A laboratory animal unit; and (7) A fodder farm to supply to all.

Vaccine Research Centre (Viral Vaccine)

The Vaccine Research Centre (Viral Vaccine) is working on the most economically important livestock disease Rinderpest. The laboratory work namely cultivation of the virus in Tissue culture and other properties of the Rinderpest virus is studied in detail. The animal transmission studies have also been carried out to indentify the mode of spread of the disease. A rapid diagnostic kit for the diagnosis of Rinderpest has been developed and released for the diagnosis of Rinderpest. The work has also been carried out on important poultry disease namely Ranikhet disease, Infectious Bursal disease and Infectious Bronchitis on aspects of early diagnosis and control.

Vaccine Research Centre (Bacterial Vaccines)

The microbial flora present in the frozen cattle semen, and the antibodies to which they are susceptible have been studies in detail. The work on the most important bacterial disease of cattle, *viz.*, Black Quarter has also been undertaken to standardize the vaccine for this disease and also to identify the antigenic determinants of the bacteria responsible[109].

Fisheries Unit

The fisheries unit develops intensive culture of fish namely prawn and crab; it cultures captive fisheries in Mathur lake and multiplies of ornamental fish.

Dairy Development

Rural Dairy Development

The Tamil Nadu Dairy Development Corporation organised producer co-operatives on the Gujarat pattern in a batch of 15 villages in the district during 1975-76. The Gujarat pattern designs thus: Milk is collected and paid for on the basis of fat content which is individually tested. Payment is made weekly. A co-operative employee is trained in artificial insemination and the Dairy Corporation supplies cattle feed on no loss no profit basis. A Veterinary Doctor of the Corporation makes visit to each co-operative society weekly. As in the case Gujarat model, the by-laws of the producer societies and preclude any activity likely to vitrate the techno-economics of the business[110]. So far as Chengalpattu-MGR district is concerned, the Dairy Corporation with the co-operation of Canara Bank, Central Banks and National Insurance Company, launched an intensive programme in Madurantakam taluk and the surrounding areas. The programme provided a base for stepping by milk production, processing and marketing in the area. While banks provided the finance for purchase of milch cattle by small and marginal farmers and landless labourers, the Insurance Company provided the risk cover. The Dairy Corporation was however providing the marketing infra-structure as well as technical inputs. Cheyyur, Irumbedu, Sengattur, Venmani, Kattu Devadur, Puthur, Kilkaranai, Vettur, (Salaiyur, Vilanganur) Thonnadu, Saravambakkam, Kottivakkam, Sithamoor, Kannimangalam, Polambakkam, Mazhuvankaranai, and Kilmaruvathur, participated in the programme.

The total population of these villages was approximately 53,000 consisting mostly of marginal farmers and landless labourers. The Canara Bank provided a sum of Rs.10,34,000 for purpose of milch cattle. Small Farmers Development Agency provided subsidy of 33.3 per cent to marginal farmers and 25 per cent to small farmers who came within their area of operation. The National Insurance Company provided insurance cover to the animals at a premium rate of four per cent.

The Dairy Corporation established a milk chilling centre at Acharapakkam on the Grand Southern Trunk Road. The Corporation collected 2,000 litres (approximately) of milk per day in this area. The average procurement price of milk was Rs.1.75 per litre. The average the content was seven per cent. A net income of Rs.2/- daily, was derived from the buffalo. Buffalo milk form a higher share in the total milk collection.

The corporation has later built up a fairly sizable network of chilling plants at Baluchettychatram and Kakkalur. Milk arriving at Madhavaram is pasteurized and then standardized to the required fat and solid non-fat level before being marketed. Madhavaram dairy mainly markets standardised milk which contains 4.5 per cent fat content and 8.5 per cent solid-non fat. A small quantity of Toned Milk with 3 per cent fat is also marketed. The process of standardisation involves the addition of skim milk powder and butter milk make up deficits in fat and other solids. It also involves the separation of fat in order to bring down the contents of the milk of the required level. During the lean season, the dairy adds larger quantities of skim milk powder and butter oil. While marketing of milk continues to form the main business activity of the corporation, a few sidelines have been developed due to increasing surpluses which have to be converted in skim milk powder and butter oil. The corporation is marketing flavoured milk, curds, yoghurt and ice-cream.

Technical Inputs

The corporation also operates personalised services to the farmers supplying milk to the corporation. These includes artificial insemination, veterinary care, cattle feed and subsidies for calves and fodder. Prior to 1972 the, entire Dairy Development activities in Tamil Nadu were carried out by the Dairy Development Department. The Tamil Nadu Dairy Development Corporation was established from 1972, by taking over the commercial activities from the Dairy Development Department. In the year 1981, Tamil Nadu Cooperative Milk Producers' Federation was formed by taking over the entire activities of the Tamil Nadu Dairy Development Corportaion. Tamil Nadu Co-operative Milk Producers' Federation is the apex body, which carries out the Dairy Development activities in Tamil Nadu under Operation Flood Programme with financial assistance from Indian Dairy Corporation/National Dairy Development Board[111].

At the district level, the Madras Chengalpattu-MGR district Co-operative Milk Producers' Union is looking after the procurement and marketing of milk. The Union is implementing the dairy development and other commercial activities in the Chengalpattu-MGR district under the Operation Flood Programme.

The Madras-Chengalpattu M.G.R. District Co-operative Milk Producers' Union Limited

Dairy Development in Chengalpattu M.G.R. District

The Madras-Chengalpattu M.G.R. District Co-operative Milk Producers' Union Limited is a renowned and premier institution with a glorious history. This Union was first started in the year 1927 as a forerunner not only in India but in the entire South East Asia. In the year 1982-83, this Union had procured 24,450 litres of milk per day, sold 1,600 litres per day locally and supplied the remaining milk to the Tamil Nadu Co-operative Milk Producers'

Federation Limited for being sold at Madras city. During the year 1991, this union had procured around 60,000 litres of milk per day from 548 Milk Producers' Co-operative Societies. It sold 12,000 litres of milk per day locally and supplied the remaining 48,000 litres of milk to the Tamil Nadu Co-operative Milk Producers' Federation Limited for being sold at Madras City. By this, the Milk Producers villages get a regular income. By adoptions of this method a sum Rs.10 crore per year flows from Urban areas to the rural areas[112].

Three hundred and sixty one Milk Producers' Co-operative Societies which are functioning in different villages in various parts of the district are affiliated to this union. Like all other District Co-operative Milk Producers' Union; this Union is also affiliated to the Tamil Nadu Co-operative Milk Producers' Federation Limited (TCMPF Ltd.-Aavin), - an apex body at the state level. The Commissioner for Milk Production and Dairy Development, Madras is the Ex-officio Managing Director for the Tamil Nadu Co-operative Milk Producers' Federation Limited. The union implements the Operation Flood Project, - Dairy Development Project, - with the financial and technical assistance from National Dairy Development Board (N.D.D.B.). The Tamil Nadu Co-operative Milk Producers' Federation also lends its technical assistance as and when sought by the union. The progress of implementation of various schemes by the union is periodically reviewed and monitored by the Managing Director, Tamil Nadu Co-operative Milk Producers' Federation Limited and the Commissioner for Milk Production and Dairy Development, Madras.

After taking field survey, the union organises Milk Producers' Co-operative Societies at village level. The Union provides Animal Health Cover to the milch animals of the milk producers at the society level through the mobile veterinary units and emergency units operated by it. The union also provides breeding cover to the milch animals of the milk producers at the society level by Frozen Semen Artificial Insemination. The union supplies Computed Cattle Feed from its Cattle Feed Plant at Madhavaram Milk Colony, to the milk producers at the society level at a reasonable price. The union also helps the Milk Producers to raise green fodder in their own lands. The union collects milk from the societies both in the morning and evening, transports the same to its chilling centres for chilling and onward transmission to Madras, for being marketed by Tamil Nadu Co-opertive Milk Producers' Federation Limited. The Union headquarters is located at Ayyanavaram. The business of the union is conducted by the Board of Directors. The Managing Director is the Chief Executive of this organisation. The union has established three chilling centres located at Acharapakkam, Baluchettychatram and Kakkalur respectively. A small quantity of the chilled milk is sold locally and the remaining chilled milk is sent to the Tamil Nadu Co-operative Milk Producers' Federation Limited (Aavin) for being processed

and sold at Madras. In Acharapakkam and Baluchettychatram chilling centres, chilled milk is sold in cans. In Kakkalur chilling centre, there are two prepac machines. In Kakkalur chilling centre, chilled milk is packed in Sachet by the prepac machines and sold in and around Tiruvallur and in the suburb of Madras, in 28 places through agents. For these booths, chilled milk is sold at Rs.5.90 per litre and the agents in turn, sell the milk to the consumers at Rs.6.00 per litre. Around 5,700 litres of milk are sold per day through the agents. Around 5,000 litres of chilled milk are sold per day in cans at Kancheepuram through Kancheepuram Milk Consumers Co-operative Society.

Financial Performance

The union has earned a profit of Rs.33.45 lakhs and Rs.24.79 lakhs during the year 1989-90 and 1990-91 respectively; It has revised the procurement, price of milk to the societies during December 1990, May 1991, February 1992 and May 1992 as follows :

Date from which price revision was effected	*Buffalo Milk* (per kg. fat)		*Cow Milk* (per kg. total solids)	
	From Rs.	*To* Rs.	*From* Rs.	*To* Rs.
1.12.90 to 14.5.91	58.00	64.25	28.00	30.75
15.5.91 to 22.2.92	64.25	67.15	30.70	32.30
23.2.92 onwards	67.15	90.00	32.30	32.30
1.5.92 onwards	-	-	32.30	36.50

Operation Flood - I

Under Operation Flood - I, the schemes were implemented only in a limited scale in this district. The procurement and input activities which were previously carried out by the Tamil Nadu Co-operative Milk Producers' Federation Limited in the district were taken over and implemented by this union from 1 April 1983 onwards. Three Mobile Veterinary Units and One Milk Procurement Team are functioning at Acharapakkam.

Operation Flood - II

Under Operation Flood - II, Buildings and Residential Quarters have been constructed at Ayyanavaram Headquarters Animal Husbandry Division of this Union. A chilling centre with a capacity of 50,000 litres per day has been established at Kakkalur village of Tiruvallur taluk and is functioning from 16th April 1986 onwards. An Animal Husbandry Sub-Centre and Residential quarters for the staff have been constructed in the campus of the Kakkalur chilling centre. Milk Co-operative Societies on ANAND Pattern

were established. Testing equipments and Registers have been issued to them free of cost. Fifty Electronic Milk Testers have also been issued to them.

Progress in procurement and input activities of the union during the year 1992-93 (up to June 1992) :

1.	Number of Milk Producers' Co-operative Societies supplying milk to the union in the district	-	361
2.	Number of societies registered -		
	Target	-	27
	Achievement	-	7
3.	Number of Milk Collection routes	-	17
4.	Number of Milk Producers benefited	-	29,550
	b) Total members	-	1,14,336
5.	Average Milk Procurement (in litres per day)	-	60,000
6.	Milk Distribution routes	-	4
7.	Average Milk Sales (in litre per day)		
	By sachets	-	5,700
	By cans	-	6,300
8.	Mobile Veterinary Units operated	-	3 (three)
9.	Emergency Units operated	-	2 (two)
10.	Number of societies provided with health cover	-	334
11.	Number of cases treated (April 1992 to June 1992)	-	7,885
12.	Number of emergency cases treated (April 1992 to June 1992)	-	212
13.	Number of societies provides with Artificial Insemination	-	91
14.	Number of V.L.W.'s trained	-	94
15.	Number of Heifer calves born (April 1992 to June 1992)	-	948
16.	Extent of land under fodder (in hectares)	-	10.74
17.	Cattle feed sold (in M.T.)	-	174

A comparative study of the progress in the year ended 1985-86 and 1991-92 is given below :

			Year	
			1985-86 (12 months)	1991-92 (12 months)
1.	Milk Producers Co-operative Societies	-	436	522
2.	Milk Producers benefited	-	34,500	1,13,933
3.	Milk chilling capacities in the chilling ventres (LPD)	-	30,000	90,000
4.	Number of Milk Collection routes	-	16	17
5.	Average Milk Procurement (in LPD)	-	45,464	60,000
6.	Milk distribution routes	-	—	4
7.	Average sales by this Union (in LPD) - sachets	-	—	5,700
	- by cans	-	4,100	6,300
8.	Number of societies under A.H. Cover	-	246	333
9.	Mobile Veterinary Units operated	-	4	3
10.	Emergency Units operated	-	—	2
11.	Number of cases treated	-	29,541	32,667
12.	Number of cases treated under emergency	-	203	944
13.	Number of societies provided with Artificial insemination facilities	-	76	89
14.	Number of artificial insemination done	-	17,036	31,289
15.	Number of Heifer calves born	-	995	2,917
16.	Cattle feed sold (in M.Ts.)	-	260	236.86

Names of chilling centres under the control of the union, their capacity etc., are tabled below :

Sl. no.	Name of the chilling centre	Chilling capacity (in LPD)	Milk routes	Average handling of milk in litres per day during the year 1991
1	2	3	4	5
1.	Acharapakkam	10,000	5	14,000
2.	Baluchettychatram	30,000	5	27,000
3.	Kakkalur	50,000	7	19,000
	Total	90,000	17	60,000

The profit and loss account at a glance -

Profit and Loss Account

Year	*Total Turnover* (Rs. in lakhs)	*Profit*	*Loss*
1984-85	347		0.86
1985-86	600	0.38	
1986-87	804	0.07	
1987-88	818		2.00
1988-89	861		2.72
1989-90	1093	33.45	
1990-91 (tentative)	1094	24.79	

Fodder development

Under various livestock development schemes, large scale grading and cross breeding operations have been undertaken in Tamil Nadu, resulting in enormous increase in graded and cross-bred animals. These animals must be fed well to express their genetic optentialities to the fullest extent. Even superior animal may not exhibit their full potential because of improper feeding. Hence, the need for proper feeds and fodders in animal nutrition has become obvious.

Fodder crops are grown in various district livestock farms, municipal sewage farms and in the land holdings of big and small farmers in private sector. The green fodder produced in the district livestock farms are preserved after meeting the daily requirements of livestock, in the form of silage and hay with a view to meet the demands of lean months[113].

The Animal Husbandry Department is also undertaking the distribution of fodder seed and slips to the farmers, so as to encourage them to take to fodder cultivation on a large scale. The farmers are also given subsidies for the purchase of fodder slips, chaff cutters and for the construction of silo pits under various fodder development schemes. Two fodder seed production units are functioning in the district one at Padappai and another at the Government Dairy Farm, Madhavaram.

The details of various regions in the district, are tabled below[114]:

Kancheepuram region comprises Chittalapakkam, Tiruvallur, Chengalpattu, Kancheepuram, Poonamallee, Ponneri, Tiruttani and Madurantakam areas where offices of Asst. Director are located. Saidapet taluk comes under jurisdiction of the Asst. Director Chittalapakkam; Tiruvallur, Uthukkottai under Tiruvallur Office, Chengalpattu under Chengalpattu Office, Kancheepuram and Uthiramerur under Kancheepuram, Sriperumpudur under Sriperumpudur, Ponneri and Gummidipoondi under Ponneri Office, Tiruttani and Pallipattu under Tiruttani and Madurantakam under Madurantakam A.D. Office. There were nine animal husbandry division in the four revenue divisions *viz.*, Kancheepuram, Saidapet, Chengalpattu and Tiruvallur. These animal husbandry divisions have been located at Saidapet, Chitalapakkam, Tiruvallur, Kancheepuram, Poonamallee, Chengalpattu, Ponneri, Tiruttani and Madurantakam. The Veterinary dispensary at Ponneri was upgraded as Veterinary hospital in the year 1983-84. An Animal Disease Intelligence unit was established in 1983-84 in the district[115].

Key Village Scheme

The Key village scheme sponsored by Government of India was introduced in the State in 1952-53. In the Chengalpattu MGR district, there were two key village centres *viz.*, Kancheepuram and Poonamallee, each centre is attached with six sub-centres.

Scheme for the salvage of dry cows

Under this scheme, a farm was opened in 1944 at Kambakkam Kancha in the Chengalpattu MGR district (later transferred to the Andhra Pradesh) at a distance of 86 kilometre, from Madras. This was shifted to Alamadhi (near Avadi) which is nearer to the city in the year 1957-58. The object of the scheme is to salvage the dry cows in the city from being sold for slaughter for reasons of economy and want of space. According to the scheme, cows in the city which become dry are admitted in this farm and maintained for a nominal fee of Rs.10 per mensem, till they are taken back pregnant or after calving by the owners. Animals which are fit for breeding only are admitted in the farm. The average period of stay of the cows in the farm is 293 days[116].

Central Cattle Breeding Farm, Avadi (Alamadhi)

The Government of India have established a Central Cattle Breeding Farm at (Alamadhi) near Avadi in the year 1973 exclusively for the production of progeny tested bull of Murrah Buffaloes. This is one of the seven Central Cattle Breeding Farms established in different agro climatic regions an different breeds/cattle. The farm is located about 30 kilometre from Madras on the North-West and 12 kilometre from Avadi Railway Station. It is situated in the latitude of 13°.12'N and longitude of 80°.06'E with an altitude of 16m. from its geographical position, this place is benefited by both monsoons.

The total area of the farm is 397.73 hectares of which about 35 hectares of land is under irrigation and the remaining area is utilised for raising rainfed crops. Fooder crops and also fodder seeds namely M.P. Chari, Pusa Chari, Bajra, Cowpea, Guinea grass, etc., are raised and supplied to the needy farmers[117].

So far, this farm has produced 1475 numbers of high quality genetic bulls and supplied 588 numbers to the different needy states like Andhra Pradesh, Bihar, Gujarat, Kerala, Maharashtra, Madhya Pradesh, Orissa and Tamil Nadu. On an average, the farm has been maintaining about 1000 animals herd at the farm and a quantum of 3,24,215 kg. of average milk is produced annually. The milk and milk products are supplied to the Ministry of Defence, C.R.P.F., Madras. In order to transfer the technology and use of high genetic murrah buffaloes for the improvement of the existing buffaloes in the areas, the farm has taken up the extension activities in nearby villages for the health care as well as artificial insemination. Government/Dairy Development Corporation Officials of different states of southern regions, students of Tamil Nadu Veterinary University and Colleges and local farmers visit the Farm frequently to familiaries with the modern management practices adopted in the Farm and they are getting benefits of the improved technique.

Regional Station for Forage Production and Demonstration, Alamadhi

The Government of India have established seven Regional Stations for Forage Production and Demonstration in different agro-climatic zones to cater to the various needs of the farmers in order to produce good quality nutritious fodder crop seeds and to make available the fodder production technology at the doors of the farmers. In addition to transfer of technology, the Regional Stations are also engaged in production and propagation of foundation, certified and labelled seed of high yielding fodder crops, pasture grasses and legumes. The Regional Station for Forage Production and Demonstration was established at Alamadhi in the year 1973 to cater to the needs of farmers in Southern States/Union Territories. The Station produces only small quantity of seeds of various cereals/legumes and grasses due to limited area under control[118].

The station produces promising pasture legumes, *viz.,* Stylosanthes hamata, stylosanthes guyanesis (Schofield), Guinea grass var, Hamil, Maize (African tall), M.P. Chari, Sorghum (PC.23) and different grasses, legumes and fodder trees.

This Regional Station has so far produced 1087 quintals of high quality fodder seeds and they have been distributed through various agencies among farmers. 3215 demonstrations of high yielding forage crops have been conducted on farmers' fields suited to their existing crop rotation. A total number of 2150 minikits have been distributed to the farmers free of cost for growing nutritious fodder crops. The station conducted 23 training courses in

which 383 extension workers/progressive farmers participated and they were imparted technical know-how to improve their grazing land and maximise fooder yield per unit area and per unit time. 12 farmer's Fair/Field Days were organised in which 1365 farmers participated and were benefited with new technology developed at the station by deploying the new varieties of cultivated crops and pasture grasses and legumes[119].

Fisheries

Fishery industry is on the threshold of dynamic development and is bound to emerge as one of the most potent employers and foreign exchange earners of the country. Tamil Nadu is endowed with vast potential in fishing industry. Chengalpattu-MGR district is one of the coastal districts where agriculture and fishing are the important occupations in the coastal tract.

Both inland and marine fishes are available. There are 64 marine fishing villages along the coast line of 137 kilometre, starting from Gunankuppam on the north to Alambaraikuppam on the south. In the coastal area, about 8080 families are engaged in fishing. Break up details of marine fishing families according to annual income group are shown below[120]:

Income Range (Annual Income)		*Number of families*
Below Rs.1000	..	1300
Rs.1001 - 3500	..	4819
Rs.3501 - 6000	..	1474
Rs.6001 - 10,000	..	425
Above Rs.10,000	..	62

It is thus evident that more families come in the income range of Rs.1001-3500 *i.e.,* 4819 out of 8080, representing more than 50 per cent. Next comes, the income range of Rs.3501 - 6000, comprising 1474 families followed by income range of Rs.1000 and less, having 1300 families. There are only 62 families which come under the income group Rs.10,000 and above.

Marine and Inland Fishing

The varieties of marine fishes available in the coastal area are sharks, skates and Rays, Cat Fishes Lesser Sardines, Chirocentrus, Anchoviella, other clupeids, Belone, Perches, Mullet, Polynemus, Ribbon fish, Silver bellies, Pomfret, Mackerel, Seer, Tunnies, Garamx, Sciaenids, Prawns, etc. About 22 places are noted for inland fishing. They are Padur, Alathur, Kunrathur, Poonamallee, Sriperumpudur, Karunguzhi, Chengalpattu, Ammanapakkam, Chemparampakkam, Kancheepuram, Wallajabad, Ayyangarkulam, Magaral, Madurantakam, Ponneri, Jhimthani,

Kuppammalchathiram, Arambakkam, Battaikuppam, Kolavai and Pulicat lake. The important varieties under inland fishes are Catla, Rohu, Mrigal, Common Carp, Murrel, Tilapia, Cat fish, Etroplus, Gobius, Eel, etc.

During the year 1986-87 a quantity of 13758 tonnes of marine fish worth Rs.444.05 lakhs and 10,000 tonnes of inland fish worth Rs.210.00 lakhs were caught.

Fish and Prawn farms

Departmental fish farms are located at Poondi, Chembarampakkam and Chengalpattu. Fish Farms are owned in private sector also and important among them are Seed Fish India, Rockfort Fish Farm, C.H.R. Farm and Indian Fish Seed Syndicate. Prawn farms are located at Vanianchavadi and Pulicat. Fish Research stations have been established at Vanianchavadi, Pulicat, Ennore and Kovalam.

Government Welfare Schemes for Fishermen Community

Marine Fisheries

For Marine fishing, government have introduced Beach landing boats and F R P boats. Nylon nets and boats are distributed to the Fishermen Community at subsidised rates.

Inland Fisheries

Subsidy is granted for construction of Chinese hatcheries, Fish seed cages, by the Fish Farmers Development Agency. (F.F.D.A).

Fresh Water Fisheries

The Fisheries Department implemented rural fishing demonstration scheme, provincialised water scheme and block development scheme for developing pisiculture in the district.

Demonstration of fish farming

Under this scheme, the department demonstrated practically as to how to grow fish in tanks and ponds profitably. The Demonstration Units were functioning in different taluks at Chengalpattu, Kancheepuram, Sriperumbudur, Karunguzhi and Ponneri. At Chengalpattu, Kaluvoy and Veepankulam were producing succulent the Fort Moat, Karuppuchettikulam, Thimmarajakulam, fish and these were sold a fresh.

The Kaluvoy lake attracts the eyes of every rail passenger who passes through. It looks like *sea* and covers an area of 1776 acres and produces large quantity of fish. The lake is licenced for fishing. Karuppuchattikulam teems with Tilapia. At Ponneri there is one Fishery Demonstration tank, at Kancheepuram and Sriperumbudur four tanks each and at Karunguzhi, there are three model fish rearing centres.

Provincialised tanks

Under this scheme, there are 39 tanks in the district. These tanks are huge irrigation *Kanmois* whose fisheries are wild but scientifically tamed and developed by the department. From 1960, the provincialised tanks are being fished by the department itself to correctly assess their fisheries pattern and also for more revenue and to show how fishing is done on proper lines. Under the scheme, Chanos fish seeds are collected from salt factory estuaries at Chunampet during June and July every year. Chanos is a marine fish but acclimatisable to fresh water and they thrive remarkably in tanks with *green water.*

Osphronemous Gourami

Introduced in the Fort Moat are breeding and fingerlings had been collected and supplied to other states. In the district, 10 *Blocks* are functioning in the following places-

1. Thirukalikundram, 2. Uthukottai, 3. Sriperumbudur, 4. Madurantakam, 5. St. Thomas Mount, 6. Minjur, 7. Kattankolathur, 8. Kancheepuram, 9. Poondi and 10. Gummidipoondi

A Separate fishery scheme has been sanctioned for intensive stocking in rural *Blocks.* Under this scheme, the fishing has been entrusted to the Panchayat Unions and executed by the *Blocks* with active cooperation of the Fisheries Department. Ten nurseries have been constructed in these *Blocks.* By the new harmone injection method, breeders are artificially induced to spawn. The hatchlings are reared in nurseries and distributed throughout the *Blocks.*

There are two fish farms in the district, one at Chengalpattu and another at Poondi. The Marine Biological Specimen Supply Station at Ennore the only station of this kind, in the whole of Inida is run by the Department of Fisheries. This attracts people from various parts of India and also from abroad[121].

Varieties of Fishes available in the district/and their Catching Seasons

Sl.no. 1	*Type* 2	*Species* 3	*Catching Season* 4
1.	Saw Fish	-Pritis spp.	Throughout the year; abundant from November to March.
2.	Silver bellies	Equula spp. Gazza spp.	Throughout the year; abundant in December to February and June - July.
3.	Mugill	-Mugill spp.	Throughout the year

4.	Prawns	-Penalus indicus P. Monodan	Abundant from September to January & March to July.
5.	Sharks	-Carichanias spp.	Moderate throughout the year.
6.	Rays	-Trygon Sephen	Moderate throughout the year.
7.	Sabre fish	-Chirocentrus dorab	January & February, May, June & November.
8.	Horse machevel	-Caranx spp.	September to January.
9.	Flying fish	-Exoceetus	May-July

There are 8382 active fishermen in the district operating 196 mechanised fishing boats, 5596 catamarans and 196 canoes. The total strength of gear is 10385[122].

Fish Marketing Centres

Ennore, and Pulicat in Ponneri taluk, Kovalam in Madurantakam taluk and Mahabalipuram in Chengalpattu taluk are the important fish marketing centres. Cold storage facility is available in the Kovalam centre. There are 55 fish landing centres consisting of three major landing centres and 52 minor landing centres. Three major fish landing centres are Thiruchinakuppam, Kovalam and Kadapakamkuppam[123]. Ennore, Pulicat, Neelangarai, Kovalam, Pudupattinam, Kadapakkam and Vyyalikuppam have ice -*cum*-cold storage facilities. Brackish water fish and prawn farms are located at Pulicat and Kovalam[124].

Marine Biological Station, Ennore

The Marine Biological Station was established at Ennore in the year 1946 for investigating the biology of the fishes of Ennore estuary, Pulicat lake and of the north section of the east coast of Tamil Nadu and the biology and culture of the edible oyster. Observations on the meteorology and hydrography of the Ennore estuary have revealed the seasonal changes and their probable effect on the biology of the fishes. The plankton of the estuary was predominated by marine diatoms which were common in the coastal waters. Studies on the silver perch showed that the food and feeding of the young ones and adults differ, the maturity is attained when they are 10 c.m., in size and above one year in age and that spawing season extends from November to March. In the case of the gizzard-shed, the immature ones feed and grow in the estuary and then move into the sea for spawing. Observations of the edible oyster have confirmed that it spawns throughout the year and that its food depends on the plankton of the estuary[125].

Pulicat lake and its fisheries

Pulicat lake which is 40 km. long and situated on the north of Madras, is the second largest stretch of brackish-water in the east coast of India, next to the Chilka lake in Orissa State. Pulicat lake is highly suitable for shrimp culture which is mainly attributed by the hydrological parametres of the lake. A survey of the lake reveals marked changes in the trend of its hydrobiology and fisheries.

Pulicat lake has a total high flood water spread area of about 462.8 sq.km. having a drainage area of about 4399.2 sq.km. The lake forms an important source of fish and shrimp supply to the markets at nearby places and Madras city and also earns a sizeable foreign exchange.

The Pulicat lake, situated between 13° 24' and 13° 47N latitude and 80° 2' and 80° 16'E longitude confluences with the Bay of Bengal about 1.5 km., north of Lighthouse Kuppam. About 1/3 of the total area of Pulicat lake rich in fisheries, lies in Chengalpattu-MGR district and the rest 2/3 area lies in Nellore district of Andhra Pradesh. The lake is nearly 59 km., long and 0.2 to 17.5 kms., broad.

Hornell (1908) compared the outline of the Pulicat lake to an inverted squatbottle, with short neck. The body of the bottle was compared with the Northern sector of the lake, the neck to the wide channel between Dhonirevu and Annamalaicheri and the stopper to the contracted channel of Pulicat town. During the monsoon months, the water level in the lake goes up from 1 to 1.5 metres and so the land masses which lay exposed during summer get submerged.

The Pulicat lake is divided into northern and southern sectors. Northern sector comprises the areas of North of Annamalaicheri, Chinna and Periyamangodu, Kuppams, Sunnambukulam, Arampakkam in the Chengalpattu-MGR district and Tada in Andhra Pradesh and also main islands Irakkam, Venadu and Sriharikottah. The Southern sector comprises the villages near Pulicat town, Avurivakkam, Sempasipalli, Karimanel, Dhonirevu Kuppam, Moosamani up to Annamalaicheri and Gunankuppam, Lighthouse kuppam, Vairankuppam, Sathankuppam, in the east and Edamanikuppam towards south. The Northern sector of the lake forms the main area of the lake and is divided into a shallow eastern division and a deeper western divisions by the inter position of two long islands, Venadu and Irakkam, lying in a North and South line. There is also another small island named Kuruvithittu on the way to Arangam from Sunnambukulam.

The history of the lake can be traced from the fossilised Molluscan shells which occur in one to two metres subsoil in the Northern sector near Sunnambukulam, Arampakkam, Irakam, Venadu areas about 20 km., from the Sea Coast (Hornell 1908). Hornell gives a picture of the past history of Pulicat lake in his report on *The Suitability of Pulicat Lake for Oyster Culture*

(Madras Investigations, Bulletin No.4, 1908). Present observations on the shores of the lake show the same characters as already explained by Hornell (1908) *i.e.,* the shores are low and sandy with casuarina and palmyra plantations.

Landing Centres

There are three important landing centres on the shores of Pulicat lake namely Pulicat in the southern sector and Sunnambukulam and Arampakkam in the northern sector which are located in Tamilnadu. Apart from these places, catches are from Avurivakkam and Annamalicheri are brought to Ponneri and from Mangadu and some other centres to Gummidipoondi. At Arampakkam, most of the landings even though come to the market, shrimp and at times, mullets are taken directly to the local merchants and sold to them who, turn, sent them to Madras after packing them in ice by vechicles.

Fishing methods of Pulicat lake

Fishing methods of backwaters in general vary to meet different conditions *i.e.* the deep channels, shallow waters with muddy bottom, the areas covered with weeds, wide and narrow stretches etc. In Pulicat lake also, different methods are in vogue for exploiting the fish wealth. In Pulicat lake, almost all the gears used by the local fishermen are made up of synthetic twine. The chief classes of fishing methods practised at Pulicat and the gear used are: 1. Cast nets; 2. Gill nets; 3. Drag nets; 4. Shore-seine; 5. Bag nets; 6. Stake-nets; 7. Hook and Line fishing; 8. Vallikodi; 9. Adappu (or) Impoundment; 10. Miscellaneous methods.

Cast nets

Cast nets are extensively used at Pulicat lake mainly in the southern sector during the monsoon months *i.e.* from October to Janurary. They are otherwise known as Visuru valai or Mani valai locally. The Cast nets are used either in the shallow waters or in the deeper waters. When they are use in the shallow waters, the fishermenwade through waist-deep water and for operating in deep waters, a Catamaran is used.Moreover the length of the net used in deep waters also more when compared to the type of cast net used in shallow waters. The catch in composed mainly of shrimps. The mesh size varies from 10 to 15 mm. in the nets used in shallow waters and up to 20 mm.[126] in the other type of Cast net.

Gill nets

Kala valai, Koduva valai, Kalla valai, Poosani valai and Madava valai come under this head. Eventhough these nets are not fixed as drift gill nets, they are dragged along the shallow waters or near the lake mouth.

Kala valai

Kala valai is used exclusively for fishing Polynemus species (Kala). During the observations it was found that fishermen were dragging this net near the lake mouth to fish out Polynemus. As described by Hornell (1924), the net is made of Hemp twine with a mesh size of 15cm., The length of the net is about 12 m and the heigh is about 75 cm., this net is used by the fishermen of Andikuppam, Kottaikuppam, Dhoniery and Chenmassipalli.

Koduva valai

Koduva valai, mainly for fishing Lates calcarifer (Koduva) is mostly used by the fishermen of Arampakkam, Manchakuppam, Chinnamangodu Kuppam, etc., of the northern sector during summer *i.e.,* May to July. The mesh of the net is the largest of all the nets used in Pulicat lake *i.e.,* between 12 and 15 cm., The net more or less resembles the Konda valai, and the twine used for netting is very thick.

Kallu valai

Kallu valai is widely used in Pulicat lake for fishing Nematolosa nasus druing the months from November to January or even up to February. This net is made of thin cotton twine and the mesh size varies in different kuppams. *i.e.,* 70 mm, 50 mm, and 40 mm,

Poosani valai is used in shallow muddy areas to catch Gerres, small mullets, Therapon etc., The net itself is very shallow *i.e.,* 60 to 70 cm. in height and the length varies between 20 and 30 metres and is made up of thin cotton twine, and they are seen to be operated near Pulicat. *Kendai valai* is used in the Northern sector, mainly for fishing mullets, (locally called Maduvai, Kendai) and Nematalosanasus.

Drag nets

All the drag nets which are used for fishing in Pulicat lake, seem to be derived from the typical Konda valai. The different nets Painda valai, Sillappu valai, Adarntha valai, Periakonda valai, chinnakonda valai, Kola valai etc., are just modification of Konda valai in their length, mesh, size and the modern of operation.

Kondakalai

The description and mode of operation of this net is vividly given by Hornell (1924). The net is made of cotton twine and is used mainly for catching mullets and shrimps. The net is operated mainly groups and the catches are emptied into a boat. This net is used throughout the year in deep as well as shallow water. Kola valai is used for fishing Beloniform fishes (Kola) in and around Annamalaicheri areas. Adarntha valai is used through out the year in the northern sector of the lake. The meshes are of very small size and used in fishing shrimps, mullets and other miscellaneous varieties of fish.

Painda valai is used extensively in the northern sector of Pulicat lake either singly or in groups. They are seen to be operated between December and March; and the main catches are Hematalosa nasus and mullets of large size. When the net is used collectively individual nets are arranged in a circular fashion, with two men on either side of the net and they come closer and closer to form a complete and continuous wall of net, enclosing a large water spread area. Thadachi Valai is also familiar only in the northern sector, particularly in and around Arampakkam and Sunnambukulam for catching large size mullets. This net is mostly used from March to August or September.

Sillapu valai

Sillapu valai, mainly operated only in the northern sector is also a modified type of Konda valai and mainly used for fishing the mullets. Some of the fisherman at Ramapuram and other villages which are in Andhra Pradesh use Nylon Yarn for webbing this net and the mullet catches are enormous in these nets.

Periakonda valai

In this net, the mesh size ranges between 25 and 35 mm, and it is used by the fishermen of the northern sector of the lake for fishing mullets and other wide variety of fishes and large size shrimps. This net also has a deep bag and is used mostly througout the year.

Chinnakonda valai

Here the mesh size is śmall *i.e.* between 15 and 20mm., and this net is also used only by the fishermen of northern sector for fishing mullets, Nematalosa Nasus, shrimps and other varieties of fishes, however, small they may be in size.

Shore Seine

Under this type, Badi valai can be mentioned as the only net not in vogue in the southern sector of the lake, The fisherman of Andikuppam, Nadurmadha kuppam and Kottai kuppam alone use this net for fishing a wide variety of fishes and shrimp. The important species of fishes caught in this net are mullets, Nematalosanasus, Thrissocles porava and shrimps.

'Padu' System for Fishing in Pulicat lake

(Padus - Fishing Grounds)

This is a peculiar system for fishing the southern sector of the Pulicat Lake which gives equal opportunity to the fishermen of different villages with different gears. The fishermen are allowed to fish in a particular fishing ground with a particular gear in a turn system. By this method the fishermen of a particular village can get their chance of atleast twice a week for all the gears used by them at different places or fishing grounds of the lake. When

the fishermen of a particular village or particular group of the same village has a padu and the other villages or the groups of the same village will stay away from that padu but do fishing with different gear elsewhere as subsidiary fishing which also overned by turn system. Padu system is practised mainly for the operation of Badi valai, Suthu valai and Kattu valai. The *Padus* can be classified into small and big depending upon the area of the fishing ground.

'Padu' refers to a fishing ground and the system confers upon each village the right to fish in a particular ground, using a selected ground, on every specified number of days between the village and groups of the same village.

'Padus' of Pulicat lake

From Lake-mouth (Western Side)[127]

1.	Nandu Padu	..	Big	Near lake-mouth
2.	Paambu padu or Sella tharai padu	..	Big	-do-
3.	Mada padu	..	Small	-do-
4.	Kallu padu	..	-do-	-do-
5.	Seeman Kuzhi	..	-do-	South of Nattanthittu
6.	Dheevu padu	..	-Big	-do-
7.	Mattu kadu	..	Small	Opposite Gunankuppam
8.	Munai jally	..	Big	West of Gunankuppam
9.	Nadu jally	..	-do-	-do-
10.	Munaigal muttukadu	..	-do-	Near lock of Buckingham Canal
11.	Kottai padu	..	-do-	Near Alithura.
12.	Settu padu	..	-do-	Dhonirevu;Opposite mosque, ferry.
13.	Patrayan padu	..	-do-	Arrivakkam
14.	Sentharai munai	..	-do-	-do-
15.	Kuzhi padu	..	Big	Arrivakkam
16.	Vezhi padu	..	-do-	-do-
17.	Melaa thittu	..	Small	-do-

From Sambasipalli (Eastern Side)

18.	Vethitaikal-padu	..	Small	Sambasipalli
19.	Annamar padu	..	Big	-do-
20.	Kappa thittu	..	-do-	-do-
21.	Jittan padu	..	-do-	-do-

22. Ul thrai padu	..	Big Sambasipalli	
23. Padagu padu	..	Small Dhorievu	
24. Godaa padu	..	Big	-do-
25. Duyna padu or Goon padu	..	-do-	-do-
26. Chetti padu	..	-do-	-do-
27. Vangu padu	..	-do-	-do-
28. Ajji munai	..	-do-	-do-
29. Kaal padu	..	Small	Near Moosamani lock
30. Lock padu	..	Big	North of Moosamani
31. Kilirja padu	..	Small	-do-
32. Savukkumara padu	..	Big	-do-
33. Palla padu	..	Big	North of Moosamani
34. Kuchi padu	..	Small	-do-
35. Sandhu padu	..	-do-	-do-
36. Katra munai	..	-do-	-do-
37. Paasi munai	..	-do-	-do-
38. Kilinjal munai	..	-do-	-do-
39. Thazha godaa	..	-do-	-do-

Shell Fisheries

The vast mud flats, north of Annamalaicheri, along the western shore of the lake up to Arampakkam and in the eastern shore near Irakkam, Arangam, and Puliancheri areas, have extensive beds of fossilised or dead molluscan shells buried underneath. Most of the fisher folk and poorer sections of the people who live near these places earn their livelihood by digging these shells out from these flats and selling them. These shells are transported to Madras city and Pulicat by boats or by lorries and from there, inturn, they are sent to different places. This shell fishery is a leased out fishery and the Government of Tamil Nadu earn a sizeable revenue out of this. The following are some of the important molluscan shells which constitute the sub-fossil layers of these and flats. Of these, *Placuna placenta, Meretrix casta* and area are found in large numbers, when compared to others.

Brackishwater Prawn Farming

Tamil Nadu is endowed with vast potential for prawn culture in brackishwaters. This mainly constitutes mullets and prawns. The relative percentage of landing of mullets and prawns vary from place to place. Prawns constitute 18.5 per cent of the fish catches in Pulicat waters[128]. Most of the brackish waters in Tamil Nadu are rich in seeds of commercially important

varieties of prawns especially Penaeous indicus. Brackishwater prawn culture is labour intensive and provides more employment opportunities to the fishermen community. The Department of Fisheries as a first step popularised prawn culture scheme in ten demonstration ponds including two farms *viz.* Pulicat and Vanianchavadi in the Chengalpattu-MGR district.

The total area of brackish water spread in the district is 14841.00 hectares. The extent of low lying areas close to the backwaters is 2662-90 ha. The district has seven main estuaries of which Pulicat is one where brackishwaters have been located. The hydrological parameters in the Pulicat lake are favourable for prawn culture. The salinity ranges from 10 to 40 ppt. Adequate quantity of plankton is available in the waters. Soil sample studies reveal that the soil of Pulicat area contain 2.5 per cent silt, 45-46 per cent of sand and 40-50 per cent clay. The soil pH is favourable which usually range from 7.2 to 7.6. The tidal fluctuation ranges from 0.1 metre to 0.5 metres. There is a departmental fish farm consisting of four ponds with an area of 0.15 hectare and with six nurseries with an area of 0.021 hectare. The object is to perfect the techniques of prawn culture particularly Penaeous indicus ultimately to transfer the technology to the prawn farmers. The Fisheries Department operates shrimp research centre at Pulicat. The Pulicat P. indicus prawn is available during the period between February and May and Kovalam P. mondon is available during March and May.

The species of prawns suitable for rearing in the area, are *Penaeus monodon* and *Penaeous indicus*[129].

Socio-Economic Condition of the Fisherfolk

About 15,000 fisherfolk are living in about 30 villages on the shores of Pulicat lake depending on its fisheries. They earn their livelihood either by fishing in the lake or by transporting firewood and molluscan shells to Madras city and nearby places. Fishing villages, their population, fishing gears used etc., are detailed below:

(a) Pulicat Area

This area comprises Nadur Kuppam, Andi kuppam and Kottaikuppam Thonircu, Jameelabath, kulathumedu on the western shore and Sathankuppam, Gorakuppam, Arangam, Vairavankuppam, Lighthousekuppam, Thirumalainagar, Sembaripalli Light House Nadu Kuppam and Gunankuppam on the eastern shore of the lake. The fisherman of the villages on the eastern shore go for fishing, only to the sea and do fishing in the marginal area of the lake opposite to their kuppams with Suthu valai on particular days in a week in turn for their subsidiary earnings that too for their daily food.

As regards to Arangam and Thirumalainagar, the fishermen enjoy the right of fishing in the lake for 45 days in a year with effect from 15 of October. But the main villages which concentrate on lake fishing are Nadur Madhakuppam, Andikuppam and Kottakuppam. About 2000 fisherfolk living in these three kuppams with about 175 country boats built at Jameelabath revu are depending on the revenue earned by selling the fish catches from Pulicat lake. They use a wide variety of nets, of which the main gears are Badi valai and Suthu valai.

The other gears used by them are Kattu valai, Kaala valai, Kallu valai, *Oi valai* etc. They also conduct fishing by castnet and Hook and line. These three kuppams follow the *Padu system* mainly for operating Badi valai, Kattu valai and Suthu valai. The fish catches are taken to the landing centre at Pulicat and auctioned. During August to October (*i.e.*, when the lake mouth becomes shallow and getting closed) they suffer very much to earn their livelihood. Only a very few fishermen are enjoying the major part of the fishery wealth of the lake, earning a lot. All these fishermen save nothing out of their earnings and during lean season of fishing, they find it very difficult to pull on their day-to-day life, and they are driven to the extent of pledging their jewels, ornaments etc. When the fish catches improve, they get back their jewels from the pawn brokers. This, as a cyclical system, goes every year.

(b) Annamalaicheri

This area includes, Aurivakkam east and west and Annamalaicheri on the western shore. Sempasipalli has a population of about 168 fisherfolk contained in 250 families and is situated on the eastern shore of Pulicat lake proper. Most of them are marine fishermen. Dhonirevu village situated next to Kottaikuppam has a population of 400 people[130]. They use kattu valai, Suthu valai, Kalavalai, Cast net etc., for fishing in the lake. Cast net fishing is peculiar to this kuppam in this area. Aurivakkam (East and West) situated at about two km. south of Annamalaicheri have a population of 350 fisherfolk and they use Suthu valai, Kattu valai, Konda valai and Kendai valai for fishing in the lake Annamalaicheri has a population of about 1700 fisherfolk and is about seven km. north of Pulicat proper. The fishermen of Aurivakkam and Annamalaicheri conduct fishing in the lake throughout the year. A few fishermen from Annamalaicheri also go to the northern sector of the lake for fishing during summer months. In this area, there are more than 260 fishing boats operating in the lake and the number of nets are very limited.

(c) Sunnambukulam area

This area comprises about nine fishermen villages *via.*, Vallampedu, Kongal, Madukal, Periakuppam (Sunnambukulam) Karaikadu (Opasamu dram), Manchakuppam, Chinnamangodukuppam, Periamankodukuppam and Pudukuppam. About 5000 fisher folk of this area fully depend on the fisheries

of Pulicat lake. Few fishermen of Vallampedu, Periakuppam and Karaikadukuppam earn their livelihood mainly by digging out the subfossilised molluscan shells in and around Sunnambukulam and transport them to Pulicat and Madras by huge cargo boats, and others from fishing in the lake. They mainly use Konda valai, Adarntha valai, Penda valai, Thadachi valai, Selappu valai, Kanni valai, Kalla valai, Oi valai and Siru valai. The other modes of fishing such as operation of Valli kodi, Adappu fishing etc., are also practised. The operation of Siruvalai is very peculiar to only Periamangodukuppam and Chinnamangodukuppam of this area. Approximately, 325 cargo boats and 175 fishing boats are operated by these fishermen.

The fishermen of these kuppam when get good catches and earn a sizeable amount on a particular day remain idle in their house without going for fishing till most part of their earnings get spent. Whenever a fisherman dies or some other calamities happen or during festivals, they stay away from going for fishing. This practise is called *Thazuvam* by the local fishermen. Most part of the fish catches from these centres are brought to sunnambukulam, from where they are taken to Elavoor, Gummidipoondi and nearby places or sold locally.

Arampakkam area

Arampakkam, Battaikuppam, Periavedu and Mothipalayam are the important fishing villages in this area, with a population of about 3000 fisher folk contained in about 900 families. They use Konda valai, Thadachi valai, Kalla valai, Pentha valai, Mada valai, Kanni valai, Adarntha valai, Koduva valai, Vallikodi etc., for exploiting the fishery wealth of Pulicat lake. Some of them earn their livelihood by digging out and transporting the fossilised molluscan shells to Madras. Pulicat and other places. There are vast salt pans on the shore along Arampakkam area (Southern shore) and so salt is produced in large quantities here, especially near Methipalayam and Ramapuram (Andhra Pradesh).

Central Institute of Brackishwater

Aquaculture[131]

Brackishwater aquaculture of finfish and shelfish, more particularly prawn farming has gained considerable importance due to its high demand in the market and export potential. In addition to its export potential, prawn farming has also been recognised for its role in increased production, higher income and employment opportunity in the rural areas. All these activities require adequate R&L support. In order to provide the technological backup, Central Institute of Brackishwater Aquaculture (CIBA), was established by the Indian Council of Agricultural Research in 1986, as a part of the VII Five Year Plan, on fisheries development. The institute's headquarters is located in Madras city with field laboratories at Muttukadu, 30 km. south of Madras.

The Institute has a 36.2 hectares lagoon area and 0.68 hectares land area at Muttukadu. The Government of Tamil Nadu had allotted 11.8 hectares of land on the sea front in Muttukadu/Kovalam villages for the establishment of prawn hatchery. The Government of Tamil Nadu has also allotted a brackishwater fish/prawn farm. (53. 2ha. in Mahabalipuram for the establishement of).

Programmes relating prawn seed production and development of technology in finfish breeding and culture are undertaken by the Finfish Culture division while the resources and technology improvement division has taken up work on nutritional aspects of prawns and fish and development of feed technology, disease disgosis and control. Problems relating to coastal saline soils and aquaculture engineering aspects are dealt with by the Fish Farm Survey and Engineering Research Division.

Prawn hatchery technology

Techniques of breeding and seed production of the important penaeid prawns *viz.*, tiger prawn (Penaeus monodon), White prawn (*P.indicus* kurma prawn) (*P.japonicus*) and green tiger prawn (*P.semisulcatus*) have been developed, involving broodstock development under captive conditions, induced maturation, larval rearing, development of larval and postlarval feed through live feed culture and also artificial feeds and water management practices. More particularly the tiger prawn, *P.monodon* has been successfully bred and its seed produced both at the Institute's small-scale hatchery at Ennore and at Muttukadu. The favourable agro climatic conditions prevailing in this part of the area makes it ideal for the continuous seed production of tiger prawn for a prolonged period.

Backyard hatchery technology

Seed production of prawns under hatchery conditions is cost-intensive, involving heavy inputs such as fibreglass reinforced plastic (FRP) tanks, water and aeration systems, live feed cultures etc. To develop an alternative model, a small scale backyard type hatchery was developed with low inputs. Using nauplii 100 no./1 reared in two capacity FRI tanks, kept in the open under polythene sheet rocfine, postlarvae 20, were produced in the same tank, using mixed phytoplankton and squilla powder as feed. Water exchange was done from PL.3 stage @ 33 per cent on alternate days and @ 50 per cent at later stages. The survival rate up to PL-20 was 37.6 per cent and an average of 35,500 no., of postlarvae were produced per tonne of water.

Artemia Production

The brine shrimp. Artemia has been successfully produced at a private salt pan in Kelambakkam, about 40 km., south of Madras in a 0.4 hectare pond using inorganic fertilizers, 21.3 kg/ha., of cyst production was achieved in this experiment.

Captive broodstock development of finfish and breeding

The seabass *(Lates calcarifer)* called *Koduva* in Tamil has been successfully reared in an earthern pond at Ennore for over a year in an attempt to develop it as a broodstock for breeding and seed production. 13 largesized fish (40-80 cm/4-10kg) were obtained alive from commercial catches from the sea near Ennore and are reared in a 0.03 hectare earthern pond with regular water management and feeding. Likewise the grey mullet *Mugil* cephalus (Madavai in Tamil) are also reared in a 0.02 hectare pond at Ennore in an attempt to induce them to maturity. This fish has been bred by induced breeding technique near Chilka lake mouth in Orissa State repeatedly over a number of years and the larvae reared up to a fortnight under field conditions. Breeding of the pearl spot, *Etroplus suratensis* in ponds at Ennore, had been done and fry obtained.

Fish culture

All Pulicat, pen/cage culture of Seabass *L.C carifer* milk fish *chanos* and mullets were done and presently *Chanosculture* is being conducted pens and cages Muttukkadu.

Feed Development

A feed processing unit has been installed at the Ennore Field Centre with a production capacity of three tonnes month. Feeds for larval, postlarval rearing, growout and maturation are prepared and tested[132].

Forestry and importance of Forests to the economy of the district

Forests are a very striking feature of the land surface. They vary greatly in composition and density. Forests are areas which have been notified by the government, as reserve forests and they include some blank patches[133]. There are no hills of any importance in this district although in the Chengalpattu taluk there are a large number of low scattered hills. The low hills in the neighbourhood of Chengalpattu are very bare of trees, though there is a considerable amount of scrub vegetation, which with necessary measures of conservancy, improves in a very short time[134]. Quantities of small firewood have been taken from these hills for local consumption, and also for the supply to the Madras city. There is a stretch of lowlying hills on both sides of the road from Chengalpattu to Thirupporur, which have a covering of scrub vegetation with a sprinkling of deciduous trees: the same remark applies to the hills near Thirukalikundram the commonest tree is Albizzia amara. Revenue was mainly derived from dye-barks and soap nuts, Firewood also constituted an important source of revenue but it was cut in a reckless manner. Therefore, this district was taken up as a forest division for the first time in and proper system of working was gradually introduced. There was a considerable area taken up for casuarina plantations and topes. Three blocks aggregating 2000 acres in Saidapet and over 50,000 acres in Tiruvallur taluk were selected and proposed for reservation under the Forest Act[135].

The area of forests including RF reserve lands and unclassed in the district was only 356.2 sq.km., in 1970s and was scattered all over the district. The major species raised in the district are eucalyptus, tereticornis, pulpwood trees, and cashew sandalwood and bamboos are also reared. Cashew is one of the important major foreign exchange earners. Other main sources of revenue under forest sector in the district are from fuelwood, minor forest produce, etc.

In order to increase the income from these sources, the Forest department involved itself in raising minor forest plantations, reafforestation of degraded forests, and intensive cultural operation in cashew plantations during 1986-87. Schemes for the consolidation of forests were also undertaken in the same period. The area under Reserve forests and reserve lands during 1986-87 were 344.99 sq.km. and 88.06 sq.km. respectively. The area under unclassed forests was 33.22. sq.km.[136]

The limits of the Chengalpattu-MGR Forest division are the same as those of the Chengalpattu-MGR Revenue district, the area of which is 7909 sq.km., The division consists of five territorial ranges, namely,

1. Tiruvallur with headquarters at Tiruvallur; 2. Tambaram with headquarters at Tambaram; 3. Kelambakkam with headquarters at Chengalpattu; 4. Chengalpattu with headquarters at Chengalpattu: and 5. Madurantakam with headquarters at Thirukalikundram.

In addition, there are two farm forestry ranges with headquarters at Tiruvallur and Chengalpattu. The Tiruvallur Farm Forestry range covers all farm forestry area in Tiruvallur and Tiruttani taluks and also the ex-panchayat forests in Tiruttani and Pallipattu taluks taken over by the department. The Chengalpattu farm forestry range covers all the other taluks of the district. The forests of the division can be categorised physiographically into two regional types, *viz.,* the plains and the hill forests.

The Plains Forests

The bulk of the forest area of the division is situated in the plains which are characterised by nearly level stretches of land traversed by rivers and streams which feed many tanks under which wet cultivation is practised. Many of the reserve forests situated in the plains also contain small isolated hillocks, *e.g.,* Thirukalikundram, Vandalur, Acharapakkam and Pulikaradu Reserve forests. An interesting feature of these forests is that they have mostly been converted into commercially valuable cashew and Eucalyptus plantations, in the past few years[137].

The Hill Forests

Allikuli hills in the western part of Ponneri taluk, which form part of the eastern ghats, is the only hill forest tract in this division. Most of the hill forests support little vegetation of any commercial importance. The valleys

and sheltered slopes of Allikudi, support vegetation consisting of species like Albizzia amara, Cathium didymum and a few scattered saplings of Santalum album. Some of the exposed slopes like Acharapakkam and Paranur Reserve Forests now bear thorny growth. Certain hill forests like Hanumanthaputheri and Valluvapakkam Reserve Forests are bouldery to rocky and support nothing much of importance or value by way of vegetation. The ex-panchayat forests in Tiruttani and Pallipattu taluks which comprise the scattered hills are almost barren and badly eroded, or the most part with degraded thorny species. The area under forests in the division was 444.07 sq.km., as on 31 March 1976 comprising 301.13 sq.km. reserve forests, and 142.94 sq.km. reserve lands.

A peculiar feature of this division is the multitude of small forest blocks lying scattered all over the plains rendering management rather laborious. The distribution of the aforesaid categories of forests in five territorial ranges, *viz.*, Tiruvallur, Tambaram, Kelambakkam, Chengalpattu and Madurantakam is as follows :

Name of Territorial Range	*Reserve Forests*	*Reserve Lands*	*Total*
1.	*2.*	*3.*	*4.*
		Area in sq.km.	
1. Tiruvallur	81.52	129.81	211.33
2. Tambaram	53.64	..	53.64
3. Kelambakkam	57.36	1.96	59.32
4. Chengalpattu	47.35	..	47.35
5. Madurantakam	61.26	11.17	72.43
Total	301.13	142.94	444.07

There are 68 reserve forests which are the absolute property of the state. Reserve lands in the division are scattered over 52 blocks. Among tree crops, casuarina is raised extensively because of the excellent market for it as fuel and also the fact that it serves as a scaffolding material in the adjoining Madras city and various towns in the district. Cocount, palmyra and mango are among the other tree crops raised in private lands in the district. The extent of forests, *viz* 444.07 sq.km., works out to 5.65 per cent of the total land area of the district as against the national average of 23.10 per cent and state average of 16.20 per cent. The per capita forest area works out to 0.02 hectare as against the State average of 0.05 hectare and National average of 0.13 hectare[138]. The chief forest requirements of the people are small timber for building and agricultural implements,fuel for domestic consumption and for cottage industries such as jaggery making,

lime and brick kilns, pottery, etc., pasture for cattle, thatch grass and to a lesser extent green leaf manure for wet cultivation. The fishermen along the coast require timber for catamarans and country craft.

Agricultural implements

The farmers normally use light wooden plough in puddled fields, and a slightly heavier one in a comparatively dry state for broadcast sowing, a wooden plank in levelling the surface in wet fields, a manvatti or spade for light hoeing and clodbraker for breaking up the ploughed up soil.

The following details show the species most used for the various parts of a plough and other agricultural implements in the order of preference.

Share	-	Tectona grandis and Acacia arabica.
Shaft	-	Tectona grandis. Thespesia populnea cassia fistula Acacia. Sundra and Morinda tinctoria.
Handle	-	Lager stoemia lanceolata. The spesia populnea, Morinda tinctoria and Acacia arabica.
Yoke	-	The spesia populnea and Morinda Tinctoria. In addition, any other readily available species are used for the yoke and the handle.
Bullock carts	-	The species used for the various parts are as follows.
Wheel	-	Spokes - The spesia populnea and A lbizzia lebbek.
Felloes	-	Inga dulce and zcacia arabica.
Hub or nave	-	Albizzia lebbek.
Axle-tree or arbor	-	Inga dulce, Mangifera Indica and Ficus species.
Shaft or thill	-	Albizzia lebbek.
Chassis	-	Albizzia lebbek.

The species are also ordinarily used for making doors, windows and other wooden works required for houses. Certain species are also used in manufacture of handlooms in the district. Slay, warp roller, cloth roller and back rest - Lager stroemia lanceolata.

Raoe board	-	Tectona grandit.
Tradlies and beams	-	Terminatia Paniculata.
Leas rod	-	Dendrocalamus striucts.
Oil presses	-	The species used in Albizzia lebbek.

Fuel

There are two fuel series known as Krishnareddy kona and Nakkalakona functioning in Allikuli R.F., of Tiruvallur range. Extensive Eucalyptus tereticornis plantations are raised in the division of meeting the fuel needs of the public.

Green manure leaves

Green manure leaves are utilised in paddy cultivation and the demand is seasonal. The demand occurs twice during the year, once in June-July and again in September-October when transplantation of paddy is done. The species commonly used for the purpose are Dodonea Viscosa, Albizzia lebbek, Erythroxylon monogynum, wrightia tinctoria, Azadirachta indica, etc. The demand is met from unreserves, wherever such unreserves capable of meeting the demand exist, in the vicinity. The rest of the demand is met from forest areas and from Tephrosia purpurea (Kolingi) raised in private fields during the dry season under the aegis of the Agriculture Department and Glyricidia maculata raised along the hedges and bunds of private fields.

Grazing

Cattle from towns and villages close to the forests resort to the forests for grazing daily and return to their habitation in the evenings. They are mostly scrub cattle maintained for their dung, which is used as fuel and manure. The grazing year traditionally coincides with the fasli year which commences on the 1 July. During the rainy season from October to December when agricultural yields are under standing crops, cattle resort to the forests for grazing in large numbers.

Minor forest produce

Minor forest products include all products obtainable from forests other than wood and thus comprise products of vegetable, animal and mineral origin except minerals that are under the control of the Mining Department.

The minor forest products of importance are only cashew raw nuts, and palmyrah usufructs including leaves. A certain amount of thatch grass is also removed from the Reserve lands in Tiruvallur Range. Barring cashew raw nuts which are collected departmentally, other items of minor forest produce are exploited through contractual agency. Each Range is treated as a Minor Forest produce unit and there are five such units in the division. The lease period is the fasli year from 1st July to 30th June.

Social Forestry

Social forestry denotes practice of forestry to the services of the society to meet the demand for fuel, manure leaf, fencing material, grazing needs small timber and other economic products and improvement of climate and environment in general. It is the greatest instrument of land transformation[139]. Social forestry for community development is a new concept of forest creation, management, and utilisation of goods and services generated there from, for the benefit of the society. Among the prime human necessities are food and shelter and for both these needs forestry can contribute substantially. The objectives of social forestry as defined by the National Commission on Agriculture are as follows[140]: i) fuel wood supply to replace cowdung; ii) small

timber supply; iii) fodder supply; iv) protection of agricultural fields against winds; and, v) recreational needs.

The area under forests represents less than six per cent of its geographical area in Chengalpattu-MGR district. This district has the privilege of being one of the first districts in the state to initiate the community forestry activities. The *Farm Forestry* scheme as it was designated, which it was commenced in 1960, was the prerunner of the afforestation programme of the Forest Department outside the Reserve Forests. The programme comprised raising plantations of babul trees in the foreshores and shallow portions of the irrigation tanks. The object was mainly meeting rural wood needs of fuel small timber for agricultural implements and fodder for cattle including goats and sheep. Besides, the wood lots are also meant to prevent encroachments of tank foreshore areas vitally needed as irrigation sources. The social forestry scheme is manned by a Ranger and a few foresters, who are attached to the territorial forest division. Concurrence from the village panchayats concerned and from the P.W.D. in the case of tanks with ayacuts exceeding 100 acres is obtained for the implementation of social forestry scheme[141].

Gradually, the schemes of tree planting activities were extended to revenue *Poramboke* plains and a few hillocks. In the sandy plains, mostly Eucalyptus was planted occassionally in eroded grass lands with some stony soil, cashew was also tried and given up later, as uneconomical.

The name of the scheme also underwent frequent changes. The components being the same, the various five year plans used the terminologies, such as *Village Forestry*, 'Extension Forestry', etc. In the 1960's and in the early part 1970's the Forest Department concentrated mainly on planting in government poramboke lands. Only in the late seventies, the Farm Forestry, activities, *i.e.*, making larger section of people to grow tree crops in and around their farms, fields and homesteads, were encouraged by the department. The department raised seedlings of the popular varieties and supplied them to farmers and others liberally. But, the noteworthy feature in the district is that some enterprising small farmers in the villages bordering Andhra Pradesh have raised nurseries on their own and used to sell the seedlings. They collect seeds from the departmental eucalyptus plantations in the district, annually raise several lakhs of eucalyptus seedlings and sell them to vendors who carry bundles of these naked seedlings, properly packed over night, send them to places like Dharmapuri and Karur and sell them to the local farmers. This activity was going on in villages around Thanipoondi of the district close to Sathyavedu of Andhra Pradesh.

In 1978, with a view to mitigate the demages due to recurrent cyclones in the coastal tracts, shelter belts of casuarina trees were raised along the coastal areas in the Chengalpattu MGR district. A separate Forest Division called *Coastal Afforestation Division* was formed with headquarters at

Chengalpattu. The division managed to find a few pieces of government and poramboke lands along the coast in Chengalpattu and raised casuarina plantations for two years. In 1980 with the advent of Swedish International Development Authority (SIDA) aided Social Forestry Programme in the state, this division was converted into a Social Forestry Division under the Government of India sponsored Rural Fuelwood Plantation Scheme.

The eighties witnessed a quantum jump in the activities of the Forest department outside the government forests. Almost simultaneously, two new programmes were launched in Tamil Nadu, one is the SIDA aided (through Government of India) Social Forestry Programme and the other is Rural Fuelwood Scheme sponsored by Government of India. Part of the Chengalpattu-MGR district is covered by the government of India scheme and the rest by the SIDA scheme. The first phase of SIDA programme was initially for five years from 1981-82 to 1985-86 and extended by another two years. The other programme is being continued by annual renewals. Though nomenclatures and funding pattern differ, there is practically no difference at all in procedures and practices adopted for these two schemes. Until 1980, the department confined its activities to formation of viable assets in the form of woodlots. The involvement of local institution, *i.e.,* panchayat and other government departments stopped with mere consents, given in the form of resolutions. *Participation* of the local community was only in the form of labour on payment of wages. There was almost a total reorientation to the major objectives of the SIDA programme. It was to seek genuine participatory involvement of local communities and villages institutions.

There was gradual shift of the responsibility from the department to the village organisations. Meeting the local needs of fuel, fodder, small timber and green manure, ecological upgradation of the environs, soil and water conservation, creation of employment opportunities, fillip to farm forestry activities and consequent improvement of economic status of small and marginal farmers were the other objectives of the programme.

Supply of seedlings to the marginal and small farmers and to the landless poor, - free of cost, - followed up with some cash incentives, and supply of seedlings on cost basis for the well-to-do farmers are the two notable farm forestry components added to the programme, when SIDA came into being. Several models of involving panchayats and cooperatives in harvesting the woodlots are tried as an experimental measure. Panchayats are encouraged to take over the maintenance and protection responsibilities of the village woodlots. In the district, during the SIDA's first phase period from 1981-87, 16130 hectares of woodlots were raised and about 2.2 crore of seedlings of fuel. fodder and fruit trees were supplied.

In the second phase of programme commencing from the year 1988, the community woodlots component was intensified. Besides the forest department, Rural Development and Agricultural departments were also

involved in implementing the Social Forestry Scheme in the district. Economically and socially backward and the landless poor get assistance from other poverty eradication programmes such as Rural Landless Employment Guarantee Programme. They are given seedlings and technical assistance, with the right to raise the crops and woodlots in identified and allotted poramboke lands, under the scheme called *Tree patta Scheme.* The beneficiaries are entitled to derive the benefits from the crops including wood yield and they don't have any right over the land in which the tree crops are grown. Agriculture Department supplied seedlings and awards cash incentives to identified families to promote Agro Forestry and Farm Forestry practices in dry lands. Beneficiary target groups are trained in Tree farming and nursery practices. Another notable feature is that about 90 per cent of the seedlings required for community, government and private planting are raised through decentralised Kissan nurseri raised preferably by small and marginal farmers who are given training and technical assistance by the Forest personnel.

During the second phase of the programme (1988-89 to 1993-94) a new dimension was added in the district like other districts in the state[142]. Hitherto, Social Forestry Programme sponsored by the Forest Department in Tamil Nadu was confined only to private lands, community lands, and government poramboke lands, other than the Reserve forests. In order to involve the local people more in the development of forests, an *Interface Forestry Programme* was launched in certain selected Reserve forests of the district. These forest areas are maintained and developed, with due regard to ecology and environmental considerations involving local communities in the process. Besides meeting local needs to the extent possible from the adjoining forests areas, there is guaranteed employment to at least one member of each family in the village, needing employment support. The Social Forestry Programme helps to meet the local needs of fuel, fodder, green manures and various other minor forest produce. It leads to biological upgradation of the environment and contributes to the conservation of the meagre forest resources of the district.

Forest Research

The forest research activities were once limited to routine collection of statistical particulars and research on regeneration of both indigenous and exotic species and exploring the possibilities of introducing a species in different localities Now the activities of research have been diversified to meet the challenges of the Forest Department. Besides finding a new but suitable and nitrogen fixing species for fuelwood, fodder and pulpwood, research works on high density, spacing trials, nursery trials and tree improvement works are undertaken[143]. Realising the urgency and need to improve the working system of the Research wing, the Government of Tamil Nadu are implementing various schemes and have created for the purpose,

a new post of Director of Research and Training of Forest Department in the year 1990. The functioning of the Research wing is monitored by Chief Conservator of Forests.

Forest Research Centre, Kattankulathur

The Forest Research centre was established in the year 1960-61 at Kattankulathur on the National Highways No.47 about 45 kilometre south of Madras[144]. The centre is spread over an extent of 21.6 hectares and is situated in Gudalur Reserve Forest of Madras Range. The soil is a red loam with an occasional patch of clay here and there. In many places the soil is fairly deep and contains enough nutrients. The climate is tropical water table is high and drainage is good. The annual rainfall is 110 cm. of which about 20 cm are precipitated by the South West monsoon and the rest by the North East monsoon. The existing natural growth is a scrub forest. The research centre is mainly intended for carrying out research on cashew. Apart from this, plant introduction trials on other species like eucalyptus, acacias and other miscellaneous species are examined in the research centre. Other research works such as seed stands, germ plasm bank, tree selection, provenance trials, progency trials etc., are taken up in the centre[144]. To suit the modern trend in the field of forestry, clonal multiplication techniques like tissue culture, grafting, airlaying etc., are also tried in the centre. There are about 24 experimental plots and 23 experimental gardens are under observation on various research activities and the results of the experiments are made available to public.

Energy Wood Division, Chengalpattu

This division was formed purely with the objective of raising high density Energywood plantation in the existing over matured and unproductive cashew plantations within Chengalpat Territorial Division. As most of the cashew plantations in these areas were raised during 1956-58, all these plantations have crossed their economical productive life span of 30 years. Therefore, it was decided to convert unproductive and low yielding cashew plantations raised before 1960.

The reason behind raising Energywood plantations in this area is also due to meeting the inadequate supply of fuelwood and to stop burning of agricultural wastes and animal dung which otherwise would be better used for restoring soil fertility and increasing food production. As fuelwood is the main source of Energy in Rural India, for their fuelwood consumption and as the semi-urban population surrounding Madras and Chengalpattu District towns; mostly depend on fuelwood for their energy consumption it was proposed to raise high density fuelwood plantations. In order to meet the objectives, it was proposed to raise Casuarina, Acacia holocerecia, Acacia auriculiformis, Acacia ferruginea, Acacia leucopholea, etc. This division was formed under G.O.Ms.No.571/E & F., dated 24 May 1988 with Headquarters

at Chengalpattu and continued year after year with subsequent G.O. Originally, a 10 year term was proposed for this division. The following techinque is followed in this Division for raising plantations.

1. Plantations are raised only in plains which have been selected and covered in the Energywood working circle; 2. Useless thorny species which are already there are first cleared, uprooted and burnt; 3. Then the area is ploughed by Tractor with disc plough; 4. Then planting of container seedlings in case of miscellaneous species and of naked seedlings in case of Casuarina will be done in 30 cm. cube pits. From 1992, Container Seedlings of Casuarina are planted (10 cm.x15 cm.); 5. 4.00 m.x 2.50 m. spacing will be adopted for Miscellaneous and 1.50 m. x 1.50 m. espacement will be for Casuarina; and, 6. Weeding and soil working around the plants will be done during November, December.

There are three Ranges in this division to carry out Plantaion works with Headquarters at Chengalpattu, Tambaram, Madurantakam. These Ranges are controlled by officers of the Rank of Forest Rangers and they are supported by field staff, *i.e.* Foresters who actually supervise the work in the field. In total there are about 11 Foresters engaged for supervision works. The Target and Achievement of this Division is given in the tabular statement.

Targets and achievements of this division from 1988-89 to 1991-92

		Financial (Rs.in lakhs)			*Physical* (in hectares)		
Sl.no.	*Year*	*Target*	*Achieve-ment*	*Percen-tage*	*Target*	*Achieve-ment*	*Percen-tage.*
1.	1988-89	23.040	22.180	96.26	670	580.00	86.57
2.	1989-90	27.00	26.774	99.16	760	752.00	98.95
3.	1990-91	24.830	24.800	99.88	700	693.50	99.10
4.	1991-92	27.080	21.640	79.91	700	700.00	100.00

Details of Miscellaneous and Casuarina plantations from 1988 to 1992[145]

Sl.no.	*Year*	*Misc.in.ha.*	*Casuarina in ha.*	*Total (ha)*
1.	1988	460.00	120.00	580.00
2.	1989	597.00	155.00	752.00
3.	1990	623.50	70.00	693.50
4.	1991	503.00	197.00	700.00
5.	1992	363.00	316.00	679.00
	Total	2546.50	858.00	3404.50

The District Forest Officer is assisted one Superintendent, one Assistant, two Junior Assistants, one Junior Draughting Officer etc.

Natural Calamities

Famines

One of the earliest references to a severe famine in Kancheepuram is that contained in Canto 28 of the well-known Tamil Classic Manimekalai[146]. Due to paucity of rains and consequent failure of crops in the kingdom, the city of Kancheepuram was affected by a severe famine. Presumably, this calamity occurred when the region around it was still under the Chola Viceroyalty sometime prior to the occupation by the celebrated Pallava rulers after conquering the local ruling chiefs. Much later sometime during the end of the seventh century, there occurred a famine in the Pallava kingdom about which references in the hymns of Sambandar are cited[147].

There is no epigraphic evidence in the numerous Copper plate charters and stone inscriptions of the Pallavas as well as contemporary ruling dynasties of a devastating famine in Kancheepuram or anywhere in the Pallava Rule. There was continuous warfare during the reigns of Mahendra Varman-I and Narasimha Varman-I against Pulikesin-II. The wars of Paramesvara Varman-I against Vikramaditya-I, though a victory to the Pallavas, affected the economic stability of the Pallava Kingdom, resulting in the exhaustion of the resources of the state, which added to the failure of rainfall, brought about famine conditions, all of which are alluded to in Avantisundari katha. The famine which is believed to have occurred during the end of the 7 Century A.D., lasting for a period of three years, is not supported by epigraphic evidence[148]. (For further details, please refer to Dr. C.Minakshi's Work - mentioned in the footnote.)

The cultivable lands in the Tondaimandalam region which occupies the present Chengalpattu-MGR district depended mostly on the seasonal rains and the provision of a network of irrigational canals, tanks, lakes and large wells had to be undertaken partly by the state and partly by private initiative to keep famine at bay. The rivers in the region were not perennial and had to depend entirely on rainfall. Successful attempts by the state had to be put through, time and again to reduce the scarcity of water supply and irrigation by constructing tanks, digging wells, formation of canals and providing sluices and embankments. In spite of these occasional efforts. famines appear to have prevailed in the Pallava Kingdom. The hymns of Appar and Sambandar are presumed to contain veiled references in their appeal to God for protection against famine.

The present Chengalpattu-MGR district was marked by great scarcity, arising from various causes during the 18 and 19 Centuries[149]. In 1733 A.D., from neglect of irrigation; in 1763, the effect of wars and disturbances coupled with famines due to neglect of irrigation works damaged the district

seriously[150]; in 1780, from the ravages of the Mysore troops; in 1789, from drought; in 1785 from extra-ordinary floods, which destroyed the tanks and water Channelari and in 1806-07, owing to a general failure of the rains throughout the Presidency, the district suffered from famine[151]. In 1867-68, prices rose very high; and during the famine of 1876, the starvation point was nearly reached. When paddy prices rose to one anna per lb., and that price was stationary for any length of time, measures of state relief became necessary. This district was peculiarly liable to cyclones, the months of May and October being the usual periods of visitation. Between 1746 and 1846, fifteen disastrous cyclones were recorded, and 1872 was marked by the occurrence of a most destructive storm of this kind. The cyclones are generated in the Bay of Bengal, and approach the coast of the district from the south-east, afterwards assuming to a west or west south-westerly direction. The area within which their action is usually felt, extends from 174.4 km. north to 192 km. south of Madras. They have from the earliest times caused great destruction to shipping, streaming of coasts with wrecks, breaching the tanks, sweeping away villages, and inflicting on the country most disastrous, losses in cattle and other livestock. The rainfall accompanying the cyclone was an average of six inches[152].

The district was thrice stormed between May 1820 and March 1821, which brought damage to several tanks and water courses and destroyed crops and cattle[153]. The effects of these storms were severely felt by the people. Owing to its proximity to Madras, it had not felt the effects of the famine to the same extent as other districts[154]. Over 50 per cent of the occupied area is irrigated, but the nature of the irrigation works is such that hardly a tenth of the area in protected in a year of severe drought.

Damage to the Reservoirs

Red Hills Tank

In February 1870, leakage was first noticed in the bank of the Red Hills Tank near the north end, when only 4¼ feet depth of water above the old calingulah crest had been admitted to the tank out of the additional depth of 15 feet which it was designed to hold. The leakage was considerable for a length of 867 feet, and for an additional length of 4596 feet, the water passed through or under the bank in smaller quantity. The new earth work which had been placed on the top of the old bank had, it was supposed, been rendered impermeable even under the pressure, due to the increased depth of water[155].

Cholavaram Tank

The circumstances as regards the Cholavaram tank had been very similar to those of the Red Hills, though in a minor degree. The bank of the Cholavaram tank slipped badly for a length of 80 feet and to a less south end, commencing at a point about 900 feet after the heavy rains of October

1870. No water was found in the bank, and it was, therefore, considered probable that the slip was not due to any percolation of tank water, but to the rain having found its way down the cracks to the lower part of the new bank, which in setting, might have been pushed outwards by the rear slope of the old bank[156].

Tamil Nadu Co-operative Marketing Federation Limited

The Tamil Nadu Co-operative Marketing Federation Limited, popularly known as 'TANFED' is an apex level Federation in Tamil Nadu and engaged in the distribution of agricultural inputs, *viz.,* fertilisers, seeds, pesticides, agricultural implements, marketing of agricultural commodities and manufacture of certain inputs including fertilisers[157]. In the Chengalpattu-MGR district, TANFED is engaged in the distribution of agricultural inputs and marketing of agricultural commodities. Details of overall performance of TANFED in Tamil Nadu (except Thanjavur and Nilgiris districts in the distribution of inputs) and the share of operation in the Chengalpattu-MGR district from 1988-89 to 1990-91 are given in *Appendix - 31.*

IRRIGATION

Irrigation is an age old art, as old as civilisation and it is practised in India from time immemorial. In the early records of the people's of India, dating back to many centuries before the commencement of this era, there are frequent references to the practice, of irrigation[158].

The main demand of irrigation is water. In 1974, the consumption of water for irrigation was about 92 per cent of all the water consumed in the country. Domestic and industrial uses accounted for the remaining eight per cent. Now that the water scarcity in rural areas or the lack of access to it, forced the people to consume less, even it is taken for granted, if all domestic and industrial needs are adequately met in another 20 to 30 years, irrigation with drawals will be almost 73 per cent of total water consumption.

One of the most popular ways of using groundwater is the tube well. The phenomenal growth of tubewell irrigation in the alluvial tracts, is related to the ease of tapping the water and the fact that its operation is directly under the control of the farmer. This enables farmers to supply adequate amounts of water at the right time to the crops. It may thus be seen that the spurt in the number of tubewells is an indication of the increasing use of groundwater. Withdrawals of groundwater in excess of the annual recharge for cultivation of water intensive crops will, in the long run, lead to drinking water crisis[159].

In Tamil Nadu, the sources of irrigation in a given tract are generally divided into five classes; All irrigation under perennial rivers such as the Cauvery, the Periyar, the Tamirabarani and the like, and the tanks fed by such rivers come under first class[160]. In grouping under this class, the channels issuing from rivers like the above, the advantages of irrigation and

drainage are carefully considered. Channels fully possessing these advantages are placed in the first class, the others being grouped in the lower classes, which may be raised when the defects are removed. Rainfed tanks containing supply of not less than eight months come under second class. Minor river channels, spring channels of the same capacity as river channels placed in the first class; and rainfed tanks containing from five to eight months are come under third class. Spring heads and other channels yielding a good supply of water but requiring much labour in clearing; and rainfed tanks of three to five months capacity are categorised under fourth class. All irrigation under small jungle streams with a precarious water supply as well as under rain-fed tanks of less than three months' capacity are classified under fifth class. Drainage from any source, when utilised for irrigation is graded one class lower than the source itself, the modification in the lowest class being effected by a lower classification of soil.

Early Irrigation System in the Chengalpattu-MGR District

There are evidences to show that the irrigation system in the Chengalpattu-MGR district got a fillip during the Pallava period. There were several methods of irrigation in practice during Pallava age. The one by means of canals was extensively in use. *Arrukkal* (rivers) was the name designed for river-channels which carried water straight from the rivers to irrigate adjoining fields[161]. It is said that a direct channel was excavated from the Palar river in the reign of Paramesvara Varman-I and the channel supplied water to an irrigation tank called Paramesvara Tataka. This channel was called Perumbidugu Channel[162]. The fields of Urrukkattukottam were irrigated from the Palar river[163].

Inundation Canals

Another ancient method of irrigating fields was through inundation canals. When the level of the river water rose higher during floods, shallow cutswere made through the river bank into which water flowed. Special spots on the basis of previous experience were identified for the heads of inundation canals which were secured from the full force of the current during inundation. Irrigation by means of inundation canals was pretty common in the Pallava age. The residents of the then newly constituted Ekadhiramangalam were permitted to form inundation canals on the banks of the river Palar, which enabled them to irrigate all the fields in the village.

Irrigation by Picotahs and baskets[164]

Lands irrigated by means of picotahs were called Ettampulam and Ettapadam. These consisted of earthware or leather bucket hung to a pole escillating in a vertical plane, one end of the plane being counter-balanced by a weight, to enable the bucket, when full, to rise with little effort. Kurrettam mentioned in the Pallava plates may be similar contrivance. Large picotahs were known as perettam. Some areas of fields were served by several

picotahs depending upon the extent of the field and the size and capacity of the well or tank. During Aparajita's reign, inscriptions refer to lands irrigated by one or two picotahs and four picotahs in Kampavarman's records on the lands on the banks of Tenneri.

Tank Irrigation

Chengalpattu - MGR is mostly a wet district, extensively irrigated by tanks and river channels. Palar and Araniar-Kortalaiyar are the two major river basins. The Palar and the Cheyyar rivers flow through the southern part of the district irrigating mainly Uthiramerur, Kancheepuram and parts of Chengalpattu taluks. Kortalaiyar and the Araniyar pass through the taluks of Tiruvallur, Sriperumbudur and Saidapet. The district has an elaborate tank system. Larger tanks, Uthiramerur, Thenneri, Chembarambakkam, Red Hills and Madurantakam are all located in central and southern parts of the district. These tanks are not always in full supply, but get water supply for a few months. The tanks of the northern taluks are mostly shallow and insecure[165].

Tanks are the main sources of irrigation in the district. Moreover, the area irrigated by tanks is larger than the irrigable areas coming under well and river channel system. Hence, Chengalpattu-MGR district is popularly called as the District of *Tanks* or *Eris* (ஏரிகள் நிறைந்த மாவட்டம்). At least every village has one tank, for the purpose of irrigation.

Construction of tanks in the days of the Pallavas

The amount of work undertaken by the Pallavas in constructing irrigation tanks was far-reaching. Epigraphy provides us with the names of a number of tanks which were in existence in the Pallava period and many of these continue to function even this day[166]. Uthiramerur and Thenneri tanks which have been in existence for many generations, are referred in inscriptions which are said to be of the eight, nine centuries of our era[167]. Irrigation tanks such as the Paramesvara Tataka in Kuram near Kancheepuram, Tirayaneri, Vayiramega Tataka in Uthiramerur, chitramegha Tataka, Velleri and Mamandur tank were formed in the years of the later Pallava Kings Nandivarman - II, Dantivarman, Nandivarman - III and Aparajita[168].

Thenneri or Tirayaneri Tank

About 16 km, east of Kancheepuram, is the tank now known as Thenneri which is regarded by some scholars as a corruption of Tirayaneri mentioned in the Kasakudicopper - plates of Nandivarman Pallavamalla. The Sanskrit portion of the plates names it Tiralaya Tataka which might have been constructed at the time of one of the predecessors of Nandivarman-II[169].

Uthiramerur Tank or Vairamegha Tataka

Uthiramerur tank lies to the west of the Uthiramerur town, which receives its supply by a channel taken from the Cheyyar river[170]. This is a large and famous tank. Among the numerous inscriptions of the place, several of which record endowments made for the maintenance of the tank in the late Pallava and early Chola Periods, not one seems to mention specifically the date of construction of the tank. On the origin of the tank, Mr. Venkayya wrote[171]: In an inscription of the seventh year of Dantivarman, who is identical with Dantipettarasar, a certain Brahmana purchased land for constructing a tank at Uthiramerur (No.80 of 1898) and it is not possible that this refers to the Vairamegha tataka. Even if this does't prove true, the fact that the Vairamegha tataka is first mentioned in the inscription of Dantipettarasar may at least provisionally be taken to show that the tank came into existence during the reign of Pallava king and that Vairamegha was one of his surnames.

A commendable feature of the administration of Uthiramerur tank during the period of later Pallavas and the early Cholas was the intensive care devoted by the committee to the maintenance in proper condition of the large Vairamegha tataka[172]. Several private endowments were made during the reigns of Dandivarman and his successor to remove the huge amount of silt deposited in the tank during the flood season of the impetuous Cheyyar river. The endowments continued even during the reign of the late Pallava king Vijaya Kampavarman, as is evident from inscriptions dated from the eight to 21 year of the ruler. The tank was much improved by Mr. Place, the then Collector of Chengalpattu district (1796-1798). Owing to the want of a masonry sluice and protective works at the head of this channel, the tank was silting up very much and the supply was rendered precarious owing to the river, topping its banks and breaching into, and obliterating the channel. A temporary dam in the river was, however, constructed for securing the yearly supply of tank[173].

Maintenance of Irrigation (Village Sabha)

The Village Sabha and its committees as administrative authorities were entrusted with the maintenance of irrigation works. The numerous sluices, canals and the tanks functioning in the district were maintained by the Villages Sabha.

Tank Committee (Erivariya Perumakkal)

The management of tanks in the villages in Chengalpattu area and adjoining regions was entrusted to a special committee called *Erivariya perumakkal* as is evidenced from the inscriptions of the later Pallavas. The committee appears to have changed the members annually.

Functions of the Tank Committees

The Village Sabha managed this committee which carried out the various endowments made in favour of tanks by donors. The endowments were sometimes in gold and often in land gifts. The expenses were met from out of the interest and dredging operations conducted sometimes twice a year and often depending upon the condition of individual tanks.

Chembarambakkam Tank

The Chembarambakkam tank is a large reservoir which lies about 23 km west of Madras. It was formed by enlarging an old native tank. The tank which bears the rather formidable name of Chembarambakkam is one of the finest in the state. It is picturesquely situated in the vicinity of bold hilly ground, and looked like a natural lake in a position where such sheet of water might very readily be looked for. Beyond furnishing the water and the site, however, nature has had very little to do with its creation[174]. Before its enlargement it held from 55.61 to 77.80 millions of cubic yards, and had an area of 4,648 acres. Its present capacity is 3120 million of cubic feet and the water spread area is 5,729 acres[175].

It is purely artificial, and its supply is retained by an embankment, 5.85 km in length, ranging from nine to no less than 28 feet in width and from 16 to 26 feet in height. Its area is 2,460.5 hectares and its volume may be estimated at 3120 millions of cubic feet of water. It maintains a sheet of paddy cultivation. Its apparatus for distribution consists of 10 irrigation sluices. Its safety during floods is insured by the action of six waste weirs or escapes (locally termed "Calingulas"), giving in the aggregate a breadth of escape channel of 676 feet, with a depth below the crest of the embankment ranging from six to 13 feet according to position. Through this area, an enormous mass of water can escape, and as the supply is dependent almost exclusively on natural rainfall and merely local drainage the protective provision has proved adequate and breaches were very rare. The last formidable breach occurred in 1818, when on the 3 of January, a breach 248 feet in length, and erosion of 15 feet below the natural surface of the ground, was made, and through it the whole volume of the tank was poured upon the lower lands. The origin of the catastrophe was traced to the failure of one of the ancient irrigation sluices, which was very injudiciously placed, and had been gradually undermined by the action of the water. This, however, was substantially repaired, and the other works of the same kind strengthened and improved, so that from that period upto new, no similar mishap has been experienced, and the works are all now in good order. The bund which runs almost North to South is about 8.90 km in length. The left flank starts on the high ground about 5 km, west of Poonamallee on the north, near 25/6 km of Madras-Bangalore road, and the right flank ends on a ridge on a rocky soil on the south. The north west position of the tank is crossed by the grand western trunk road, between 30/4 km, and 32 km.

Supply

The tank has a free catchment of 29.78 sq. miles and a combined catchment area of 138 sq. miles with 219 tanks about it. Besides the supply from its own catchment, the tank receives supply from Palar and Cooum rivers. The supply from Palar river is brought to Sriperumbudur tank through Kambakkal channel, a branch Govindavadi Channel (which in turn is a branch of Kaveripakkam channel) taking off from Palar anicut. There is a direct surplus channel called Chowdrikkal from Sriperumbudur tank and Chowdrikkal also gets the surplus from Pillapakkam tank and falls into Chembarambakkam tank. In the northern side, there is a regular system of supply from the Kortalaiyar across which an anicut and regulator have been constructed. The anicut is known as Kesavaram anicut, wherefrom a channel called old Bangaru Channel takes off. At a distance of 8 km., of this channel, the surplus from the Cooum tank joins and this is the head of the Cooum river. From Cooum river, the supply is received through, new Bangaru Channel taking off at Korattur anicut. It irrigates villages in the Sriperumbudur taluk and the irrigable area being 13019 acres[176].

Surplus arrangement

The tank has three surplus weirs and one ground bye wash at the right flank of the tank bund, No.3, weir is 71.37 m. length and is provided with 23 falling shutters each 10 ft. long and 2'6 " high, working on sheets fixed the body wall of the weir. The top of the shutters when raised is at full tank level of the tank. The two other weirs are 844 ft, and 114 ft, respectively. They are flush and broad crested. The weirs are capable of surplusing of total discharge of 14746/C/s. A new regulator has been constructed with provision for and advance depletion up to eight ft. below (full tank level) of warranted. The regulater has five vents of size 11.0 x 3.05M., and is capable of surplusing maximum discharge 21000 C/s. The surplus water from the tank as well as the drainage from its ayacut falls with the Adayar river, which crosses the Southern railway lines by a girder bridge between Saidapet and Guindy railway stations. There are 38 villages irrigated by the tank which are situated in close proximity to one another. There are a number of field channels scattered over the area for the purpose of irrigation. There are also wells for irrigation at times of water scarcity. The total ayacut area of the tank is 13223 acres[177].

Hydraulic Particulars of the Tank are tabled below

Full tank level + 25.42 metre

Maximum Water level + 26.03 metre

Top of Bund

LS OM to 3100 M + 27.95 metre

LS 3100 M to 8000 M + 28.53 metre

Top width of Bund	: 4.88 metre
	Front 1 3/4 : 1
Side Slopes	: Rear 2 ½ : 1
Total length of bund	: 8900 M
Area of the free basin	: 29.78 sq.mile
Combined catchment	: 138 sq.mile
Area of water-spread at full tank level	: 9.75 sq.mile or 271.63 M sq.ft.
Depth of water at full tank level	: 22.00 feet.
Zero of gauge	: + 61.40 M.S.L.
Capacity at full tank level	: 3120.47 M.cft.

It is proposed to raise the Full Tank Level (F.T.L) of Chembarambakkam Tank by 0.60 M. to store water received under Krishna Water Supply Project (Telugu-Ganga Project) which is under execution. The Chembarambakkam tank will receive 1000 c/s. through a link channel of 2.5 km. length from Poondi Reservoir and the Channel excavation is under progress. This tank will serve as a subsidiary storage to Poondi Reservoir without detrimental to its existing irrigation interest[178].

Madurantakam Tank

Madurantakam tank is formed by damming up a small river called the Kiliyar, which rises in the hill at Vandavasi in the Thiruvannamalai Sambuvarayar district[179]. This work, which is one of the most important in the district, owes its existence in its present form to Mr.Place, the then Collector (1796), who connected and strengthened the banks of two smaller tanks which he found there, and converted them into a larger one with a calingula or escape at the northernd end. This calingula is one of the finest works of its kind in the country. It is built in the form of a waved line, and the height from the crest to the bed of the river below, is 30 feet. The southern portion, especially, is a very curious and beautiful specimen of masonry. Instead of being built in steps, the descent is formed to imitate the curve which the flood water takes in afresh, and huge blocks of granite have been hewn into this shape, and are bound with lead. An inscription on a pillar at the northern end records that the tank was completed by Mr.Place, the then Collector, in 1798, after being twice carried away, and gives details as to the cost, etc.

As originally designed by Mr.Place, the tank was constructed to irrigate five villages, besides Madurantakam, through the four sluices in its bank, and to supply the tank of Karunguzhi by a channel, about 0.4 kilometre in length, mostly cut through rock. During 1870's, the calingula was raised 2 feet 3 inches, and this channel was carried two miles further on from the calingula end of the Karunguzhi tank as far as Sanur. At the southern end of the Madurantakam tank another channel was, at the same time, excavated to carry the surplus water through the Mambakkam tank to Aringunram. Both these projects however, appear to have been of doubtful advantage for, the Madurantakam tank receives its supply from a drainage basin which is seldom or never sufficient to send down a fresh large enough to top the Calingula, unless during a heavy North East monsoon, when the tanks referred to are already filled to overflowing by local rainfall, and as the levels of the channels, as thus designed are such that the Madurantakam calingula required to be discharging before they received any water, the water so sent down has proved useless, and in the case of the Mambakkam tank repeatedly caused disastrous breaches. The bund of the Madurantakam tank is about 4.00 k.m. long, and the circumference of the tank when full is about 11.2 k.m. Now a project called Madurantakam High Level Canal Scheme project is under execution. Under this scheme, a canal is excavated from the Right flank of Madurantakam tank to feed 32 tanks lower down[179(a)].

Irrigation tanks in the district cover an extent of 1.57 lakh hectares. They depend solely on monsoonic rains. Most of the tanks get filled up only in the North East monsoon from October to December and irrigate single crop wet lands. Nearly two-thirds of the annual total rainfall occur during this period. There are 3644 irrigation tanks in the district[180]. About 2288 are minor tanks with less than 40 hectares ayacut each and the remaining 1356 have more than 40 hectares ayacut. Other important tanks are Palar, Chitteri, Palaiyeri, Manimangalam, Pallavan Kolathur, Thirumazhisai, Sriperumpudur, Madur Kattur, Ambattur, and Menambadunthangal tanks and Cooum eri and Chembeduperia eri. (Others with more than 1000 hectares ayacut are Thenneri, Uthiramerur, Madurantakam and Chembarampakkam tanks.) Tanks at Red Hills and Sholavaram receive water diverted by supply from Kortalaiyar through Poondi reservoir and Tambarapakkam anicut. These tanks are connected by a channel to augment city water supply system.

The Uthiramerur tank is another larger tank in the district. It is fed by the river Cheyyar. A channel called *Kambakal* carries the water from the Palar to several tanks in the Kancheepuram and Sriperumbudur taluks. A number of tanks are fed by channels which take off from the rivers in the district[181]. Chengalpattu taluk stands first in having more tanks followed by Madurantakam, Ponneri, Tiruvallur, Cheyyar, Kancheepuram and Sriperumbudur Pallipattu taluk, has less number of tanks numbering 35 followed by Uthukottai, Tiruttani each, having 64 and 70 tanks respectively.

Talukwise details of tanks and the area of ayacut under each tank are given in *Appendix - 32*. Details regarding number of tanks having an ayacut of below 100 acres and their total ayacut area, are given Panchayat Union-wise in Appendix - *33*.

Well Irrigation

In addition to irrigation channels, and tanks, several irrigation wells were also excavated by the Pallava monarchs. The earliest reference to a well (Paniyakupa) in the Pallava epigraphs is traceable in the Gunapadeya Copper plates of Charudevi[182]. Numerous wells must have come into existence in the Pallava villages during the seventh and eighth centuries. The Brahmedeya and devadana gifts invariably accord royal permission to dig wells in different villages concerned as part of the privileges enjoyed by such gifts.

The channels, irrigation tanks and wells were supervised, maintained and their water regulated for purpose of irrigation by a special village committee known as *Eri Variyam* or tank Committee. The tank committee consisted of thirty members who were elected by *Kudavolai System*[183]. Besides, wealthy people also excavated channels or tanks as an expression of their Philanthrophy. In order to improve the irrigation facilities, the Cholas distinguished themselves by building irrigation works which converted many dry areas into green fields.

Wells are divided into two classes; wells sunk in lands held on dry assessment; and those sunk in wet lands, or lands classed as wet under government sources of irrigation. The former are termed *ayacut* wells, because the ayacut, or area attached to them is dependent for its irrigation solely upon the well supply and not upon any other source; the latter are called *supplemental* wells because their main function is to supplement the irrigation from government works whenever the supply in them fails owing to deficient rainfall or other causes. Excluding *Kaccha* or temporary wells, which are few, the number of ayacat wells returned for 1900-01 for ryotwari tracts alone amounted to 13,000 in Chengalpattu irrigating 28,200 acres.

Doruvu wells

Doruvu wells are sunk, on the banks of rivers and streams[184]. These *doruvu* wells derive their supply partly from channels from the river or stream. In Chengalpattu district, regular wet crop paddy was cultivated by *doruvu* wells[185].

Supplemental wells

The Chief function of supplemental wells, that is, private wells sunkin wet lands, is to supplement irrigation from government works when the supply in them proves insufficient for raising or maturing a crop[186]. They are found chiefly under very precarious sources, and are of great use in enabling the

ryote to save their crops in times of deficient supply, and often to grow even a second crop when the water in government works is dried up. There are about 1,02,000 of private irrigation wells in Chengalpattu MGR district[187]. Irrigation through wells is practised mainly for garden cultivation. However, for wet cultivation in the insufficiently irrigated areas, and for better dry cultivation, wells are often used. Second paddy crop partially depends on wells, while third crop totally on well irrigation.

Spring Channels

Water supply from spring channels is more assured than from the tanks and other river channels. Generally, there won't be failure of water supply except in a period of successive bad years. There are either permanent channels rising from recognised spring heads which are a few or temporary channels dug by ryots in the beds of rivers after the freshes are over. A number of spring channels take water supply from the Palar while river channels take flood water from both sides of the Palar. There are land springs known as *Kasams* in sandy areas. The depth of the land springs is about 10-12 feet. Channels are taken from them to command lands directly within a distance ranging from 4.5km. 6.4 km. They are mainly found in Kancheepuram taluk.

Buckingham Canal

This canal runs as a drain parallel to the Bay of Bengal throughout the district[188]. Since the Buckingham canal is below the mean sea level, water cannot be exploited for irrigation purposes due to inundation of sea water.

Sprinklers and Drip Irrigation

Non-availability of water during a major part of its growing phase adversely affects yield and quality of crops. At present, flood irrigation and in a limited way, sprinklers and drip system are practised in farmers holdings and growers have found the drip system to be the ideal water-saving device for field crops. The drip system, especially the Typhoon system, uses less than 50 per cent of water needed to raise a crop by conventional irrigation methods[189].

Drip and sprinkler irrigation scheme has now become more prominent in agricultural operations[190]. Madugus and Spring ponds or Vanchies support small extent each, but cumulatively their contribution to irrigation is quite substantial. A further feature of irrigation in this district is the springs which are active along the slopes of hills. The Nandanam springs in Baitakodiyambedu village which supports an ayacut of more than 100 acres for eight to 10 months in a year can be, cited as instance in point[191].

Drip Irrigation System

The basic principle underlying the Drip Irrigation System is to make every drop of water count. Through emission on the pipes networked over the field surface or buried, the water drips directly on to each individual plant's root zone. Slowly but steadily, the plant gets the right amount of water, at the right place and at the right time. The pipes are connected to a pump and filtration system placed near the main water source. This system can be adopted to poor soil and water quality as well as difficult terrain. As only roots are watered, weed proliferation is minimised, as is the use of pesticides. Drip irrigation also preserves soil fertility, while other conventional irrigation methods erode through waterlogging and salination. Labour costs are reduced as drip irrigation is automated[192]. It is suitable for any part of the country and it requires just 40 to 50 per cent of the water used by flood irrigation.

The Chengalpattu MGR Circle Public Works Department has its jurisdiction over the entire Chengalpattu MGR district in respect of irrigation and buildings. It also looks after the navigational system relating to Madras district. The circle is functioning with its headquarters at Kancheepuram. Three divisions, *viz.*, Kancheepuram division with headquarters at Kancheepuram, Saidapet division and Buckingham Canal division at Madras are under the control of this circle[193]. The main activities of the divisions are the maintenance of irrigation source and government buildings in addition to formation of new tanks, construction of new anicuts, excavation of new channels and construction of new buildings.

The circle maintains the following irrigation systems : 1. Palar Anicut System; 2. Cheyyar Anicut System; 3. Chembarambakkam Tank System; 4. Surattapalli Anicut System; and, 5. Vallur Anicut System.

About 105 tanks are fed by the Palar, Cheyyar, Chembarambakkam, Suratapalli and Vallur irrigation systems. Besides this, 61 tanks are fed by 20 anicuts which have been constructed across the rivers. There are 1459 rainfed tanks under the maintenance of the Public Works Department (vide *Appendix-16*). This also includes ex.Zamin tanks, having more than 100 acres of ayacut, which were taken over by the P.W.D. The number of tanks maintained by the panchayat unions is 2233 which have a total ayacut of 11987 acres. Number of ex-Zamin tanks are 225 having an ayacut of 79826 acres. These sources are now maintained under the functional head of maintenance and repairs and Accelerated Minor Irrigation Programme (AMIP). The Irrigation Works of improvement nature and original construction are also executed by PWD Department from out of the funds allotted under the S.M.I.P., AMIP and Irrigation EXT & Implementation to increase food production.

Talukwise details of the tanks maintained by PWD including system tanks are as under

Sl.no.	Name of Taluk	No. of Tanks	Ayacut (in acres)
1	2	3	4
1.	Kancheepuram	112	50578
2.	Uthiramerur	70	19569
3.	Chengalpattu	207	57522
4.	Madurantakam	171	38054
5.	Cheyyur	115	26578
6.	Sriperumbudur	92	31013
7.	Saidapet	77	17089
8.	Tiruvallur	123	30041
9.	Tiruttani	70	18858
10.	Palliput	35	7546
11.	Uthukkottai	64	19667
12.	Ponneri	132	41017
13.	Gummidipoondi	86	25069
		1354	382601
System tanks			
1.	Palar System tank	82	25653
2.	Cheyyar System tank	7	6564
3.	Suruttapalli System tank	15	6188
4.	Chembarambakkam System tank	1	13223
	Total Tanks	1459	434229

Modernisation of tanks

23 irrigation tanks have been taken up for modernisation in the district as against 150 tanks taken up in Tamil Nadu under the European Economic Community Aid Schemes. This being a coastal district depth of groundwater of the tanks ranges from two to 40 metres below the surface, depending on this proximity to the sea. These are seasonal fluctuations in the level and salinity status of groundwater. Supply from tanks is however dependent on monsoon rains.

Major tanks and their ayacuts[194]

Sl.no.	*Tanks*	*Ayacut* (in ha.)
1.	Chembarambakkam	5268
2.	Thenneri	2371
3.	Uthiramerur	2205
4.	Madurantakam	1151
5.	Palar	1031
6.	Dhamal	834
7.	Pallavankulam	847
8.	Sriperumbudur	530

Extent of area irrigated by different sources

1.	Tanks	156242 ha.
2.	Wells	90963 ha.
3.	Tubewells	26908 ha.
4.	Canals	7440 ha.
5.	Other sources of water supply (wells supplementary)	25,818 ha.
6.	Springs, etc.	6330 ha.
	Net area irrigated	2.38 lakh ha.
	Gross area irrigated	3.38 lakh ha.
	Percentage of net area sown	73 per cent
	Percentage of gross area irrigated	74.65 per cent

The Geographical area of the district is 7,85,606 hectares/covering six per cent of the total geographical area of the state. The net area sown in the district during 1987-88 was 2,77,578 hectares which works out to 35.3 per cent of the total area of the district. Major sources of irrigation of the district are tanks and ordinary wells. Cultivation is undertaken by both the methods *viz.*, irrigation and unirrigation. General statistical information is given for the year 1987-88. The total area sown during 1987-88 in the district shares 5.0 per cent of the total area sown in Tamil Nadu State during the same period. The cropping and irrigation intensities were 1.22 and 1.23 respectively. Taluk-wise distribution of area sown and area irrigated to the gross area sown and irrigated during 1987-88 are tabled in *Appendix-34*. The ratio between the area sown and area irrigated for the food and non-food crops in the district during the year 1987-88 has revealed that for food crops it is 0.88 and for non-food crops it is 0.49. Taluk-wise break-up in respect of area sown, and area irrigated for paddy and cereals are tabled in

Appendix-35. Taluk-wise details on area sown, area irrigated for total food and non-food crops are shown in *Appendix-36.*

Palar River Project :

Palar is one of the major rivers in Chengalpattu-MGR district. This river has its source near Chintamani in Kolar district of the Karnataka State. The only anicut across Palar is near Wallajapet. Prior to the construction of the above anicut, Korambu or temporary Mud Kondam used to be constructed across the river to increase the supply in the open head channels feeding the ayacut. This temporary Kondam used to get seriously damaged after flash flood. In order to have a permanent remedy, the anicut was constructed across the river Palar in the year 1855-58 at the place, where the Korambu was in existence. In the year 1903, there was a heavy flow in the river Palar. The water level recorded then was 2.39 M. over the anicut crest. Due to this sudden and unprecedented inflow, the anicut was extensively breached. Later, the anicut was restored in the year 1905[195]. At the time of its construction, the anicut had four head sluices, namely Mahendravadi and Kaveripakkam head sluices on the left and Sakkaramallur and Dusi head sluices on the right banks.

The anicut is now 2628 feet long with 650 feet at the left end and 200 feet at the right end; one foot above the crest, with a brick wall for the breaking section and an effective length of 2556 feet; with a crest level of 496.88 feet for an effective length of 2137 and 497.38 for 419 feet. It has two securing sluices, one with 10 vents on the North (Left) and another with 20 vents on the south (right)[196].

Cheyyar Anicut Project

The river Cheyyar takes its source from Javadi hills in Chengam taluk and joins the Palar river on the right side near Thirumukkudal. The total catchment area is 1864 Sq.km., above the anicut, of which 620 square kilometre are in hills. The Cheyyar anicut across the river is situated at about 80 kilometre from Uthiramerur tank and about 16 kilometre east of Arani. This was the sixth anicut across the river and the first five anicuts were small ones[197]. The sixth anicut was constructed across it at the head of the Uthiramerur tank supply Channel, which takes off on the right side to irrigate 5436 acres. The work was taken up in 1948-49 and completed in 1951. The total ayacut fed by the Cheyyar River Project was 12250 acres in the district. The main channel taking off from the right side of Cheyyar anicut was designed to fill up several tanks. The number of tanks fed by this system was 144 of which 40 were fed directly by channel and others from tank to tank. The total area irrigated under this system was about 8000 acres[198].

Araniyar River Project

The need for a reservoir across the Araniar was felt at the beginning of this century and subsequently investigation was done in the year 1905. It was proposed to form a reservoir by throwing an earthern bund across the river near Pulukuṅdram village popularly called Nandavanam village. The capacity of the reservoir was about 3000 million cubic feet and would irrigate about 10,000 acres[199]. The site of the reservoir was chosen at Pichattoor at the western border of the district, and about 6.5 km., west of Nagalapuram just below, the joining with Iyenkalwa. The length of the earth bund is 2 miles, 2 furlongs in length with 270 feet width and a height at 47 feet above the deepest bed. The water spread area of the reservoir is about 6.42 sq. miles. It would submerge 118 acres of wet lands, 855 acres of dry lands and 514 of Poramboke and reserve forests in parts of three villages in Tiruvallur taluk.

The length of left side channel is about five km., furlongs and that of the right side channel is 3 miles 6 furlongs. The ayacut under both the channels are directly irrigated. The expenditure incurred to the entire scheme by the grant, was Rs.87.08 lakh for works and Rs.95.82 lakh including direct and indirect charges. The project was designed to supply water regularly to about 10,000 acres in Tiruvallur and Ponneri taluks and to bring a new ayacut of about 2500 acres in Tiruvallur taluk directly under the reservoir[200].

Minor River Project

Kortalaiyar River Project

The Kortalaiyur river project is the minor river project. It originates from the surplus of Kaveripakkam tank in the North Arcot Ambedkar district. It receives the surplus of the tanks of Walajah taluk and two jungle streams, the Mahendravadi and the Toppur, and passes through Tiruvallur and Ponneri taluks. The Kortalaiyar flows in a north easterly direction and enter the south eastern corner of Tiruttani and then reaches the Tiruvallur taluk. A regulator has been put up across the river Kosathalaiyar, near Poondi which is called Poondi Reservoir or Sathiyamurthy Sagar mainly to serve the need of drinking water supply for the Madras city. There is no irrigation under this reservoir[201].

Ozhalur River Channel

The Ozhalur river channel is another minor irrigation scheme in the district. In the year 1949, the Government sanctioned the scheme for the construction of a masonary retainer wall in the Palar River bed for the portion of running along the riverbed Ozhalur channel.

Sriperumbudur Tank

The full tank level of the Sriperumbudur tank is 46.04 metres and the maximum water level is 46.64 metres. The top of bund level is 46.78 metre and the top width of bund is 2.70 H. The total length of bund is 3.80 km. The

ayacut area is 1423 acres and the catchment area is 6.80 sq. miles and combined catchment area is 24.10 sq. miles. The maximum flood discharge from its catchment is 7.005 c/c. There are five weirs in the tank and their respective lengths are 31.40 metre, 3.30, 125.00 metres 41.80 metres and 19.80 metres. The tank has four sluices. The sill level of the first sluice is 43.08 metres. The sill levels of sluices Nos. two, three and four are 41.40 metres, 40.60 metres and 43.30 metres respectively.

Pillaipakkam Tank

Pillaipakkam tank comes under the Palar Anicut system and it is located in Sriperumbudur taluk. The catchment area of the tank is 28.98 sq. miles and the ayacut under the tank is 1097 acres. Paddy and Ragi are the main crops cultivated in the area. Pillaipakkam, Chinna Pillaipakkam, Naduvencheri and Odennkaranai villages are benefited by this tank. The full level of the tank is 40.100 M. The maximum water level is 40.700 M. and top of bund level is 42.000 M. The free catchment area is 8.89 sq. miles and combined catchment area is 28.98 sq. miles. The maximum discharge from combined catchment area is 68.08 cum/sec[202]. The capacity of the tank at full tank level is 3.45 m.cum. and the annual storage is 5.18 m.cum. The tank has 1 1/2 fillings. The maximum depth of the tank is 4.040 m and the bund length is 3660 m. There are two weirs for discharging surplus water and a calingulah with a length of 26.20 m. with narrow crest. There are six sluices.

Thollazhi Anicut

This anicut was constructed in the year 1984 under the Rural Landless Employment Guarantee Programme. The total ayacut area is 379.63 acres. Paddy and ragi are generally grown in the area and normally, single crop is raised. The bed width of the channel is 1.60 m. and bed slope is 1/2000. The sill level is 43.800 m. The water level is 45.700 m. and the top of bund level is 49.000 m. The top width of the bund is 2.00 M and the length of the anicut is 70 metres. The discharge in the channel is 8 cum. sec.

Hydraulic particulars are given below[203]

Length of the anicut	70 metres
Crest level of anicut	+50.00 m.
U/S water level	+52.40 m.
D/S water level	+50.70 m.
Flood Bank Top width	2.00 m.
Flood Bank Front slope	1 1/2 : 1
Flood Bank Rear Slope	2 : 1
Width of Scour Vent	1.80m.
Head Sluice size	1.20m. x 0.90m.
Free catchment	8.12. sq. miles
Combined Catchment	112.20 sq. miles

Annappa Naicken Kuppam Anicut (A.N. Kuppam Anicut)

The Annappa Naicken Kuppam anicut has been constructed across the Araniar river at a cost of Rs.12.60 lakh in the year 1969 at distance of about 48 km. from the origin of Araniar river in Nagan Hills in Chittoor district of Andhra Pradesh. The anicut is situated at A.N. Kuppam village in the Gummidipoondi taluk. The catchment area is 373.0 sq. miles and it irrigates about 8574.58 acres covering 20 villages under single cropping system. It supplies water for 20 system tanks.

Hydraulic particulars of the tank

I.	1.	Catchment area	373 sq. miles
	2.	Maximum Flood discharged	43,000 c/s.
	3.	Length of Anicut	103.63 m.
	4.	Crest level of anicut	+17.830 m.
	5.	Sill of anicut	+15.240 m.
	6.	Height of crest of anicut	2.59m.
II.	*Supply Channel Details :*		
	1.	Number of Vents	3 nos.
	2.	Size of each Unit	1.50 m x 1.75 m.
	3.	Sill level of Head Sluice	+16.00 m.
	4.	Full supply discharge	275 c/s.
III.	*Scouring Sluice :*		
	1.	Number of Vents	3 nos.
	2.	Size of Vent Way	1.50 m x 2.55 m.
	3.	Sill of Scouring Sluice	+15.24 m.
IV.	*Anicut Main Channel*[204]*:*		
	1.	Length of the Channel	4919 m.
	2.	Bed Width	4.50 m.
	3.	Full supply depth	1.75 m.
	4.	Discharge at Full supply level	275 c/s.

Vallur Anicut System

The Vallur anicut is the third and last anicut across the Kosathalaiyar river otherwise known as the Kortalaiyar, the first being at Kesavaram and the second at Tambarambakkam. The river enters in to sea at Ennore, which is about 12.80 kilometre from the Vallur anicut. The river carries flood supply during the north-east monsoon and runs full or nearly full, only for a few days in the year. The anicut overflows with a slight depth for about a month

of more after which the flow gradually subsides to a state of stagnation in front of the anicut during the summer season. There is a very little spring flow from the river bed. The anicut was constructed in the year 1872. Prior to the construction of the anicut 72 mud kondam were raised from time to time by the mirasidars of Vallur, Minjur, Athipattu and Nandiambakkam villages. To remunerate the great labour involved in putting up the mud korambu across the river from time to time and maintaining them throughout the year, government granted certain main lands to the mirasidars styled the "Aminjial Niral Pizakadai Inams". After the construction of the anicut, this labour ceased, the inam rights were resumed and the lands fully assessed.

The anicut

The anicut is in the limits of the Minjur Village, where the normal width of the river is about 600 feet. The anicut is 606 feet and 6 inches long with a top width of three feet, a better of 1 in 6 on the upstream side and a vertical face on the down stream side. The crest of the anicuts is at +15.55 (M.S.L.) and 5.25 feet above the sill level of the sand vents. At about three feet below the crest on the upstream side,·a skin wall one foot six inches wide has been constructed with a better of 1 in 6. The anicut is of dressed laterite stone in lime mortar, and the skin wall is of brick in lime mortar. Both the anicut and the skin wall is of brick in lime mortar. Both the anicut and the skin wall are plastered over in cement. There are two aprons, the first one (20 feet wide) has been formed of dressed laterite stones in lime mortar, pointed in cement and the second (15 feet wide) of rough laterite stone in cement mortar.

The sand vents

There are two sets of sand vents each consisting of five spans of 6 feet 4 inches with sills at +10.30 (M.S.L.). The height of the opening is four feet four inches to the underside of beàm stones. The sand vents are closed by means of needle shutters which are operated according to necessity. Each vent has also got a guide stone, one foot by one foot in section and fixed about the middle height of the vents. The first set of sand vents commences at 77 feet 10 inches from the left abutment and the second set commences from 200 feet 7 inches from the right abutment.

The Head Sluice

The Vallur Main Channel takes off with an open head on the left side of the river above the anicut. At about 2½ furlongs below the head of the channel, there is a head sluice with 6 vents of 5 feet by 5 feet each, with sill at 10.85 M (M.S.L.). The vents were originally provided with needle shutters.

Channels

a) Main Channel

The Vallur Main Channel has its head sluice at 24 chains and runs

away from the river in more or less south-easterly direction and is 3 miles 13 chains long. It terminates in a small field channel which discharge into a pond at Kuruvimedu salt pans.

b) Branch Channels

There are four branch channels with open heads, taking off from the main channel.

The Minjur Channel takes off at 704 metres on the left side and is 3.28 km. long.

Chitrakal Channel takes off at 885.14 metres on the right side and is 2.41 km. long.

Nandiambakkam Channel takes off at 2.112 km., on the left side and is 2.70 km. long.

Athipattu Channel takes off at 2.45 km., on the left side and is 5.00 km., long[205].

APPENDIX - 1

Number of operational holdings and area (operated by size class of operational holdings)

1970-71 Chengalpattu District (Area in hectares)

Size class-hectares	*Individual holdings*		*Joint holdings*		*Total holdings*	
	Number	*Area*	*Number*	*Area*	*Number*	*Area*
1	*2*	*3*	*4*	*5*	*6*	*7*
0-0.5	14,019	36,032.33	159	33.42	144,178	36,065.75
0.5-1	76,697	55,068.86	33	25.66	76,730	55,090.92
1-2	63,523	89,602.38	24	32.86	63,547	89,635.24
2-3	24,633	59,631.40	24	58.28	24,657	59,689.68
3-4	11,520	39,599.18	16	57.02	11,536	39,656.20
4-5	6,423	28,522.78	7	31.02	6,430	28,553.80
5-10	10,219	68,688.42	22	143.19	10,241	68,831.61
10-20	2,769	36,864.58	9	109.17	2,778	36,973.75
20-30	470	11,194.86	..	..	470	11,194.86
30-40	132	4,536.79	1	33.11	133	4,569.90
40-50	43	1,903.74	..	..	43	1,903.74
Above 50	53	4,228.11	2	207.79	55	4,435.90
Total	340,501	435,873.43	297	727.92	340,798	436,601.35

APPENDIX - 2

Number of operational holdings and area reporting irrigation. Chengalpattu MGR District

(Area in hectares)

Size class-	*Total holdings*		*Wholly irrigated*		*Wholly unirrigated*		*Partly irrigated*		*Total area*
hectares	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*	*Irrigated*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
0-0.5	144,178	36,065.75	94,241	22,104.97	23,365	5,482.25	7,433	2,241.08	1,157.00
0.5-1	76,730	55,090.92	47,418	29,700.62	11,607	7,133.06	12,202	7,950.21	4,248.00
1-2	63,547	89,635.24	34,703	40,685.55	7,835	8,608.95	17,103	20,962.38	11,505.00
2-3	24,657	59,689.68	12,077	23,620.79	2,415	4,312.65	8,842	17,703.14	10,087.00
3-4	11,536	39,656.20	5,257	14,382.12	985	2,489.41	4,837	13,352.84	7,712.00
4-5	6,430	28,553.80	2,945	10,196.49	476	1,444.98	2,723	9,608.01	5,670.00
5-10	10,241	68,831.61	4,198	21,021.32	776	3,429.50	4,886	25,332.75	15,127.00
10-20	2,778	36,973.75	888	7,767.44	278	2,317.04	1,465	13,439.50	7,696.00
20-30	470	11,194.86	115	1,480.15	71	1,168.82	249	3,618.91	1,764.00
30-40	133	4,569.90	25	495.78	17	349.97	74	1,565.91	604.00
40-50	43	1,903.74	12	157.11	8	209.80	16	368.16	159.00
Above 50	55	4,435.90	11	170.90	10	301.51	26	1,023.27	536.00
Total	340,798	436,601.35	201,890	171,783.24	47,843	37,247.94	59,856	117,166.16	66,269.00

Source : Agricultural Census, 1970-71, Chengalpattu District, Department of Statistics, Madras, p.3

APPENDIX - 3

Number and area of operational holdings (revised) in the district in 1976-77

(Area in hectares)

Sl. no.	Size class (hectares)	Individual Holding		Joint Holding		Individual and Joint holding		Institutional holding		Total holdings	
		Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
1	2	3	4	5	6	7	8	9	10	11	12
1.	Below 0.5	2,29,179	58,935.77	2,574	517.88	2,31,753	59,453.65	339	69.13	2,92,089	59,522.78
2.	0.5-1.0	87,508	65,537.72	999	131.13	88,507	66,268.85	144	104.76	42,651	66,373.61
3.	1.0-2.0	66,023	90,403.53	708	1,011.06	66,731	91,414.59	101	141.00	66,832	91,555.59
4.	2.0-3.0	24,528	59,228.38	280	706.92	24,808	59,929.30	51	128.19	24,859	60,055.49
5.	3.0-4.0	11,190	38,424.76	139	485.57	11,329	38,910.33	32	113.61	11,361	39,023.94
6.	4.0-5.0	5,096	27,709.11	88	401.25	6,384	97,808.36	19	85.39	6,343	27,085.75
7.	5.0-7.5	825	32,702.75	23	332.12	6,341	39,297.03	18	106.14	6,332	39,408.18
8.	7.5-10.0	2,335	20,174	69	619.70	2,404	29,795.85	8	66.52	2,412	20,860.37
9.	10.0-20.0	2,019	26,417.42	38	504.28	2,057	26,921.70	31	239.90	2,088	27,161.60
10.	20.0-30.0	253	5,956.27	5	124.56	58	6,080.83	9	207.88	267	6,288.71
11.	30.0-40.0	62	2,195.99	4	136.06	66	2,332.05	4	133.67	70	2,465.72
12.	40.0-50.0	19	876.65	3	133.29	22	1,009.94	7	290.89	29	1,300.83
13.	50 and above	22	1,651.19	1	80.90	23	1,732.09	4	4,297.56	27	2,029.65
	Total	4,35,599	4,35,963.64	4,997	5,977.93	4,40,596	4,41,941.57	764	1,984.60	4,41,360	4,43,926.17

Source : World Agricultural Census, 1976-77, Tamil Nadu, Part II, State Regional District tables issued by the Commissioner of Agricultural Census, Madras, Government of Tamil Nadu, p.115.

APPENDIX - 4

Percentage distribution of number and area of operational holdings revised in the district during 1976-77

(Area in hectares)

Sl. no.	Size class (hectares)	Individual holdings		Joint holdings		Individual and Joint holdings		Institutional holdings		Total holdings	
		Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
	Below 0.5	198.75	99.01	1.11	0.87	99.86	99.88	0.14	0.12	2,32,089	59,522.78
1.	0.5-1.0	98.71	98.74	1.13	1.10	99.84	99.84	0.16	0.16	88,651	66,373.61
2.	1.0-2.0	98.78	98.75	1.06	1.10	99.84	99.85	0.15	0.15	66,832	91,555.59
3.	2.0-3.0	98.67	98.62	1.13	1.17	99.80	99.79	0.20	0.21	24,859	60,057.49
4.	3.0-4.0	98.49	98.47	1.23	1.24	99.72	99.71	0.28	0.29	11,361	39,023.94
5.	4.0-5.0	98.31	93.25	1.39	1.44	99.70	99.69	0.30	0.31	6,342	27,885.75
7.	5.0-7.50	98.31	98.38	1.41	1.35	99.72	99.73	0.28	0.27	6,332	39,400.13
8.	7.5-10.0	96.81	96.71	2.86	2.97	99.67	99.68	0.33	0.32	2,412	20,860.37
9.	10.0-20.0	96.70	97.26	1.82	1.86	98.52	99.12	1.48	0.88	2.088	27,161.60
10.	20.0-30.0	94.76	94.71	1.87	1.98	96.63	96.69	3.37	3.31	267	6,288.71
11.	30.0-40.0	88.58	89.06	5.71	5.52	94.29	94.58	5.71	5.42	70	2,465.72
12.	40.0-50.0	65.52	67.39	10.34	10.25	75.86	77.64	24.14	22.36	29	1,300.83
13.	50.0 and above	81.48	81.35	3.70	3.99	85.18	85.34	14.82	14.66	27	2,029.65
All size classes		98.70	98.20	1.13	1.35	99.83	99.55	0.17	0.45	4,41,360	4,43,926

Source : World Agricultural Census, 1976-77, Tamil Nadu Part II, State Regional and District Tables and issued by the Commissioner of Agricultural Census, Madras, Government of Tamil Nadu, p.116.

APPENDIX - 5

Inter percentage distribution of number and area of operational holdings (revised) in the district during 1976-77

District : Chengalpattu (Area in hectares)

Sl. no.	*Size class (hectares)*	*Individual holdings*		*Joint holdings*		*Individual and Joint holdings*		*Institutional holdings*		*Total holdings*	
		Number	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*
1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*
1.	Below 0.5	52.61	13.52	51.52	8.66	52.60	13.45	43.98	3.48	23,20,089	59,522.78
2.	0.5-1.00	20.09	15.03	19.09	12.23	20.09	14.99	8.85	5.28	88,651	66,373.61
3.	1.0-2.00	15.16	20.74	14.17	16.91	15.15	20.68	13.21	7.10	66,832	91,555.59
4.	2.00-3.00	5.63	13.59	5.60	11.73	5.63	13.56	6.68	6.46	24,859	60,057.49
5.	3.00-4.00	2.57	8.81	2.80	8.12	2.57	8.80	4.19	5.72	11,361	39,023.94
6.	4.00-5.00	1.43	6.28	1.76	6.71	1.44	6.29	2.49	4.30	6,343	27,885.75
7.	5.00-7.50	1.43	8.89	1.78	8.89	1.43	8.89	2.36	5.35	6,332	39,400.13
8.	7.50-10.0	0.54	4.63	1.38	10.37	0.55	4.71	1.05	3.35	2,412	20,860.37
9.	10.0-20.0	0.46	6.06	0.76	8.44	0.47	6.09	4.06	12.09	2,088	27,161.60
10.	20.0-30.0	0.06	1.37	0.10	2.08	0.06	1.38	1.18	10.48	267	6,288.71
11.	30.0-40.0	0.01	0.50	0.08	2.82	0.01	0.54	0.52	6.74	70	2,465.72
12.	40.0-50.0	0.00	0.20	0.06	0.23	0.00	0.23	0.92	14.66	29	1,300.03
13.	50.0 and above	0.01	0.38	0.02	1.35	0.00	0.39	0.51	14.99	27	2,029.65
All size class		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	4,41,360	4,43,920.15

Source : World Agricultural Census, 1976-77, Tamil Nadu Part II, State Regional and District Tables issued by Commissioner of Agricultural Census, Madras, Govt. of Tamil Nadu. P.117.

APPENDIX - 6

Number and area of operational holdings of Scheduled caste - 1979-80

(Area in hectares)

Sl. no.	Size class (hectares)	Individual holdings		Joint holdings		Sub-Total (Individual + Joint holdings)		Institutional holdings		Total holdings	
		Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	Below 0.5	40,138	8,860.64	525	136.00	406	8,996.64	0	0.00	406	8,996.64
2.	0.5-1.0	8,526	5,887.78	194	137.62	8,720	6,025.40	0	0.00	8,720	6,025.40
3.	1.0-2.0	4,304	5,573.50	124	163.36	4,420	5,736.94	0	0.00	4,428	5,736.94
4.	2.0-3.0	1,172	2,676.61	23	64.31	1,195	2,740.02	0	0.00	1,195	2,740.92
5.	3.0-4.0	416	1,402.61	7	27.80	423	1,430.31	0	0.00	423	1,430.31
6.	4.0-5.0	196	888.09	5	21.49	201	909.57	0	0.00	201	909.57
7.	5.0-7.5	149	873.64	4	21.18	153	894.82	0	0.00	153	894.92
8.	7.5-10.0	73	656.33	0	0.00	73	656.33	0	0.00	73	656.33
9.	10.0-20.0	42	570.76	0	0.00	42	570.76	0	0.00	42	570.76
10.	20.0-30.0	13	310.25	0	0.00	13	310.25	0	-0.00	13	310.25
11.	30.0-40.0	2	66.96	0	0.00	2	66.96	0	0.00	2	66.96
12.	40.0-50.0	1	48.25	0	0.00	1	48.25	0	0.00	1	48.25
13.	50.0 and above	4	699.30	1	50.19	5	749.49	0	0.00	5	749.49
	Total	55,036	28,514.70	883	621.94	55,919	29,136.64	0	0.00	55,919	29,139.64

APPENDIX - 7

Percentage distribution of number and area of operational holdings in Chengalpattu MGR district

Social Status : Scheduled Caste

Sl. no.	Size class (hectares)	Individual holdings		Joint holdings		Sub-Total (Individual + Joint holdings)		Institutional holdings		Total holdings	
		Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	Below 0.5	98.71	98.49	1.29	1.51	100.00	100.00	0.00	0.00	406.63	8,996.64
2.	0.5-1.0	97.70	97.72	2.22	2.28	100.00	100.00	0.00	0.00	87.20	6,025.40
3.	1.0-2.0	97.20	97.15	2.80	2.85	100.00	100.00	0.00	0.00	44.28	5,736.94
4.	2.0-3.0	98.08	97.65	1.92	2.35	100.00	100.00	0.00	0.00	11.95	2,740.92
5.	3.0-4.0	98.35	98.04	1.65	1.94	100.00	100.00	0.00	0.00	423	1,430.31
6.	4.0-5.0	97.51	97.64	2.49	2.36	100.00	100.00	0.00	0.00	201	909.57
7.	5.0-7.5	97.39	97.63	2.61	2.37	100.00	100.00	0.00	0.00	153	894.82
8.	7.5-10.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	73	656.33
9.	10.0-20.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	42	570.76
10.	20.0-30.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	13	310.25
11.	30.0-40.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	2	66.96
12.	40.0-50.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	1	48.25
13.	50.0 and above	80.00	93.30	20.0	6.70	100.00	100.00	0.00	0.00	5	749.49
	Total	98.42	97.87	1.58	2.13	100.00	100.00	0.00	0.00	55919	29136.64

Source : Tamil Nadu Agricultural Census 1979-80, Chengalpattu District, Department of Statistics, Madras, p.1.

APPENDIX - 8

Number and area of operational holdings of Scheduled tribes - 1979-80

(Area in hectares)

Sl. no.	Size class (hectares)	Individual holdings		Joint holdings		Sub-Total (Individual + Joint holdings)		Institutional holdings		Total holdings	
		Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	Below 0.5	1,130	258.46	23	4.13	1,153	262.59	0	0.00	1,153	262.59
2.	0.5-1.0	368	270.82	10	7.02	378	277.84	0	0.00	378	277.84
3.	1.0-2.0	263	364.35	9	13.97	272	378.32	0	0.00	272	378.32
4.	2.0-3.0	89	220.18	6	15.28	95	235.46	0	0.00	95	235.46
5.	3.0-4.0	37	124.93	2	6.74	39	131.67	0	0.00	39	131.67
6.	4.0-5.0	17	69.54	5	22.27	22	91.81	0	0.00	22	91.81
7.	5.0-7.5	22	135.43	4	23.36	26	158.79	0	0.00	26	158.79
8.	7.5-10.0	3	24.19	0	0.00	3	24.19	0	0.00	3	24.19
9.	10.0-20.0	4	56.19	0	0.00	4	56.19	0	0.00	4	56.19
10.	20.0-30.0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
11.	30.0-40.0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
12.	40.0-50.0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
13.	50.0 and above	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Total	1,933	1,524.09	59	92.77	2,992	1,616.86	0	0.00	1,992	1,616.86

Source : Tamil Nadu Agricultural Census, 1979-80, Chengalpattu District, Department of Statistics, Madras, p.25.

APPENDIX - 9

Percentage distribution of number and area of operational holdings in Chengalpattu MGR district

Social Status : Scheduled Tribe

(Area in hectares)

Sl. no.	*Size class (hectares)*	*Individual holdings*		*Joint holdings*		*Sub-Total (Individual + Joint holdings)*		*Institutional holdings*		*Total holdings*	
		Number	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*
1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*
1.	Below 0.5	98.01	98.43	1.99	1.57	100.00	100.00	0.00	0.00	1,153	262.59
2.	0.5-1.0	97.35	97.47	2.65	2.53	100.00	100.00	0.00	0.00	378	277.84
3.	1.0-2.0	96.69	96.31	3.31	3.69	100.00	100.00	0.00	0.00	272	378.32
4.	2.0-3.0	93.68	93.51	6.32	6.49	100.00	100.00	0.00	0.00	95	235.46
5.	3.0-4.0	94.87	94.88	5.13	5.12	100.00	100.00	0.00	0.00	39	131.67
6.	4.0-5.0	77.27	75.74	22.73	24.26	100.00	100.00	0.00	0.00	22	91.81
7.	5.0-7.5	84.62	85.29	15.38	14.71	100.00	100.00	0.00	0.00	26	158.79
8.	7.5-10.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	3	24.19
9.	10.0-20.0	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	4	56.19
10.	20.0-30.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
11.	30.0-40.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
12.	40.0-50.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
13.	50.0 and above	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
	Total	97.04	94.26	2.96	5.74	100.00	100.00	0.00	0.00	1,992	1,626.86

APPENDIX - 10

Number and area of operational holdings of others (other than SC and ST) - 1979-80

(Area in hectares)

Sl. no.	Size class (hectares)	Individual holdings		Joint holdings		Sub-Total (Individual + Joint holdings)		Institutional holdings		Total holdings	
		Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	Below 0.5	3,17,305	67,570.47	4,797	1,085.75	3,22,102	68,656.22	314	71.40	3,22,416	68,727.62
2.	0.5-1.0	93,530	65,420.62	1,726	1,234.68	95,256	66,655.30	187	132.82	95,443	66,788.12
3.	1.0-2.0	59,539	82,174.14	3,453	4,118.90	62,992	86,293.04	122	178.00	63,114	86,471.04
4.	2.0-3.0	21,761	49,428.81	346	837.79	22,108	50,266.60	66	158.95	22,174	50,425.55
5.	3.0-4.0	9,055	30,251.63	150	513.97	9,205	30,765.69	25	82.44	9,230	30,848.04
6.	4.0-5.0	4,554	20,205.33	68	304.93	4,622	20,510.26	18	81.26	4,640	20,591.52
7.	5.0-7.5	4,584	27,528.47	96	537.46	4,681	28,065.93	23	141.24	4,704	28,207.17
8.	7.5-10.0	1,701	14,436.11	29	249.88	1,730	14,685.99	19	152.79	1,749	14,838.78
9.	10.0-20.0	1,455	19,431.11	27	368.24	1,482	19,799.35	18	260.53	1,500	20,059.88
10.	20.0-30.0	241	5,556.99	4	118.07	215	5,673.06	6	153.55	251	5,826.61
11.	30.0-40.0	57	1,914.05	1	37.66	58	1,951.71	6	199.41	64	2,151.12
12.	40.0-50.0	34	1,639.59	0	0.00	34	1,639.59	3	134.45	37	1,771.04
13.	50.0 and above	50	3,316.66	3	294.11	53	3,610.77	4	418.25	57	4,029.02
	Total	5,138,870	3,83,870.98	10,698	9,699.44	5,24,568	3,98,570	42,811	2,165.09	5,25,379	400,735.51

Source : Tamil Nadu Agricultural Census 1979-80, Chengalpattu District, Dept. of Statistics, Madras, p.25

APPENDIX - 11

Percentage distribution of number and area of operational holdings in Chengalpattu MGR district.

Social Status : Others (Area in hectares)

Sl. no.	*Size class (hectares)*	*Individual holdings*		*Joint holdings*		*Sub-Total (Individual + Joint holdings)*		*Institutional holdings*		*Total holdings*	
		Number	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*	*Number*	*Area*
1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*
1.	Below 0.5	98.41	98.32	1.49	1.58	99.90	99.90	0.10	0.10	3,22,416	68,727.62
2.	0.5-1.0	95.99	97.95	1.81	1.85	99.80	99.80	0.20	0.20	95,443	66,768.21
3.	1.0-2.0	94.34	95.03	5.47	4.76	99.81	99.79	0.19	0.21	63,114	86,471.04
4.	2.0-3.0	98.15	98.02	1.55	1.66	99.70	99.68	0.30	0.32	22,174	50,425.55
5.	3.0-4.0	98.10	98.86	1.63	1.81	99.15	99.73	0.27	0.27	9,230	30,948.04
6.	4.0-5.0	98.14	98.13	1.47	1.48	99.61	99.61	0.39	0.39	4,640	20,591.52
7.	5.0-7.5	97.47	97.59	2.01	1.91	99.51	99.50	0.49	0.50	4,704	28,297.17
8.	7.5-10.0	97.25	97.29	1.66	1.68	98.91	98.97	1.09	1.03	1,749	14,838.78
9.	10.0-20.0	97.00	96.86	1.80	1.84	98.80	98.70	1.20	1.30	1,500	20,059.88
10.	20.0-30.0	96.02	95.37	1.59	1.99	97.61	97.36	2.39	2.64	251	5,826.61
11.	30.0-40.0	09.06	83.98	1.56	1.75	90.62	90.73	9.38	9.27	64	2,151.12
12.	40.0-50.0	91.89	92.41	0.00	0.00	91.89	92.41	8.11	7.59	37	1,771.04
13.	50.0 and above	87.72	82.32	5.26	7.30	92.98	89.62	7.02	10.38	57	4,029.02
	Total	97.81	97.04	2.04	2.42	99.85	99.46	0.15	0.54	523,379	4,097,35.51

APPENDIX - 12

Panchayat Union-wise details on the Land Utilisation

(Area in Hectares as on 1987)

Sl. no.	Name of Panchayat Union	Forests	Barron	Non-agricultural use	Culti-vable waste
1	2	3	4	5	6
1	Gummidipoondi	3,017	2,192	7,108	1,946
2	Minjur	..	5,990	14,256	27
3	Cholavaram	..	198	4,911	151
4	Ellapuram	1,630	2,645	3,984	436
5	Poondi	2,665	1,931	8,136	1,509
6	Tiruvallur	..	4	6,602	118
7	Kadambathur	..	1,610	6,059	462
8	Pallipattu	2,416	510	2,580	98
9	R.K. Pet	2,858	1,086	2,155	94
10	Tiruttani	711	2,888	2,101	1,192
11	Tiruvelangadu	491	1,394	4,700	1,810
12	Poonamallee	335	6	5,125	188
13	Sriperumpudur	1,755	77	10,688	1,100
14	Kuntrathur	1,255	12	9,294	435
15	Puzhal	..	52	6,680	401
16	Villivakkam	77	353	8,680	446
17	St. Thomas Mount	707	2,282	6,607	1,604
18	Kattankolathur	7,341	606	10,436	467
19	Thirupporur	6,865	1,891	10,230	320
20	Thirukalikundram	2,063	908	10,685	199
21	Kancheepuram	..	16	9,288	706
22	Walajabad	..	410	10,144	611
23	Uthiramerur	1,784	1,342	11,312	460
24	Madurantakam	762	2,203	8,988	1,749
25	Acharapakkam	961	2,635	6,152	1,636
26	Chittamur	482	753	6,733	1,121
27	Lathur	4	2,386	4,345	899

APPENDIX - 12 *(Contd.)*

	Permanent pastures	Misc. Tree crops	Current fallows	Other fallow lands	Net area shown	Total area
	7	8	9	10	11	12
1	2,145	2,042	4,032	756	18,462	41,708
2	1,417	924	3,736	419	20,720	47,489
3	749	360	2,413	293	10,110	19,185
4	399	1,724	348	236	12,174	23,576
5	679	6,612	2,104	912	8,692	33,300
6	131	27	3,982	630	6,937	18,431
7	313	196	5,616	1,440	9,512	25,208
8	34	485	5,219	3,396	2,923	17,661
9	62	422	4,131	2,485	4,136	17,421
10	74	211	4,203	1,380	5,849	18,609
11	144	161	7,226	2,460	7,700	25,986
12	105	760	1,622	386	7,086	15,613
13	1,139	963	1,940	5,541	14,366	36,569
14	1,432	8,095	512	3,707	9,495	34,238
15	372	234	1,790	210	2,957	12,696
16	397	415	710	2,350	4,112	17,540
17	289	408	4,538	2,635	4,643	23,705
18	1,731	1,350	4,736	2,296	6,713	35,676
19	2,953	1,420	6,434	835	10,434	41,382
20	1,360	1,400	7,212	1,013	10,442	35,282
21	756	435	7,717	1,616	8,718	29,352
22	927	152	4,422	1,535	16,604	34,805
23	1,674	647	14,165	1,054	10,514	42,952
24	1,939	1,954	12,526	2,055	7,826	40,002
25	1,935	2,785	9,450	1,236	8,903	35,693
26	1,710	2,621	11,956	1,440	7,320	34,136
27	1,067	67	6,956	1,660	10,170	27,554

Source : Structure Plan for Chengalpattu District - report from Deputy Director of Town and Country Planning, Chengalpattu - South Arcot Region 1988 - p.p. 37-40.

APPENDIX - 13

Physical and Financial achievement of the Saline and Alkaline Reclamation scheme from 1979-80 to 1990-91

Sl.no.	*Year*	*Physical*		*Financial Achievement (Subsidy ponent)*
		Target	*Achievement*	
1	*2*	*3*	*4*	*5*
1.	1980-81	2,000	238	21,344.00
2.	1981-82	2,000	542	35,700.00
3.	1982-83	500	531	28,425.00
4.	1983-84	500	534	32,550.00
5.	1984-85	500	613	60,975.00
6.	1985-86	500	730	42,300.00
7.	1986-87	500	547	37,800.00
8.	1987-88	2,000	2,010	1,00,384.00
9.	1988-89	2,000	2,016	1,02,212.00
10.	1989-90	2,000	2,015	98,986.00
11.	1990-91	2,000	2,009	83,984.00

Source : Assistant Agricultural Chemist, Saline and Alkaline Reclamation Centre, Kancheepuram,report dated 17 June 1991.

APPENDIX - 14

Major and subsidiary crops cultivated in the Chengalpattu-MGR District during the year 1989-90

Sl. no.	*Division*	*Paddy*	*Mill-ets*	*Cot-ton*	*Pul-ses*	*Sugar-cane*	*Con-ut*	*Ginge-ly*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1.	Ambattur	10,200	200	..	2,000	..	850	100
2.	Ponneri	25,000	200	..	2,000	100	3,000	100
3.	Gummidipoondi	15,000	500	..	1,000	..	2,750	1,500
4.	Tiruvallur	20,000	1,000	..	2,500	700	9,100	1,000
5.	Uthukottai	18,000	1,000	..	2,500	200	9,300	500
6.	Tiruttani	10,000	2,500	..	2,000	1,000	13,200	500
7.	Pallipattu	8,000	1,700	..	2,000	1,400	11,200	800
8.	Kancheepuram	30,000	800	100	3,000	1,000	5,160	300
9.	Sriperumbudur	38,000	2,000	..	3,000	150	8,100	300
10.	Uthiramerur	15,000	800	..	2,000	600	6,550	300
11.	Chengalpattu	35,000	1,200	50	5,000	700	3,900	300
12.	Madurantakam	26,000	200	50	5,000	500	8,800	700
13.	Cheyyur	20,000	1,150	..	2,000	650	6,000	700
	Total	2,70,700	14,250	200	34,000	7,000	87,910	7,100

Source : Joint Director of Agriculture, Chengalpattu-MGR District at Madras - report dated 19 March 1992.

APPENDIX - 15

Area Under Cultivation of Major and Subsidiary Crops from 1980-81 to 1990-91

Year	*Paddy*	*Ragi*	*Pulses*	*Cumbu*	*Sugarcane*
1	*2*	*3*	*4*	*5*	*6*
1980-81	2.66	0.15	0.034	0.041	0.037
1981-82	2.86	0.13	0.038	0.041	0.05
1982-83	2.17	0.11	0.031	0.040	0.049
1983-84	2.72	0.17	0.243	0.07	0.038
1984-85	3.20	0.24	0.263	0.06	0.063
1985-86	3.25	0.18	0.318	0.05	0.095
1986-87	2.22	9.16	0.330	0.042	0.080
1987-88	2.38	0.13	0.310	0.032	0.070
1988-89	2.33	0.135	0.300	0.035	0.075
1989-90	2.56	0.157	0.318	0.040	0.086
1990-91	2.10	0.107	0.220	0.029	0.090

Source : Joint Director of Agriculture, Chengalpattu-MGR District at Madras, - report dated 19 March 1992.

APPENDIX - 16

Normal Yield Kg/ha

Crop	*1980-81*	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1985-86*	*1986-87*	*1987-88*	*1988-89*	*1989-90*
Paddy	1626	1798	1517	1867	1866	1866	2685	2683	3313	3350
Ragi	1622	1961	1521	728	1508	1800	2100	2615	2655	2239
Cumbu	2043	1687	1339	1160	1184	2410	2066	1701	3038	2937
Pulses	352	421	335	228	350	352	520	550	600	604
Sugarcane	101	101	83	92	102	101	102	102	104	114.83

Source : Joint Director of Agriculture, Chengalpattu-MGR District at Madras, report dated 19 March 1992

APPENDIX - 17

II. Horticultural crops grown in Chengalpattu-MGR District (area in ha.)

Sl. no.	*Area under various crops*	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1985-86*	*1986-87*	*1987-88*	*1988-89*
Fruits									
1.	Banana	1266	1030	1186	1718	1765	1582	1464	1685
2.	Mango	1912	1651	1782	2446	2442	2827	3202	3956
3.	Jack	2	2	1	2	96	97	79	81
4.	Pineapple	1	..	..	1	..	79	6	..
5.	Guava	14	12	11	20	21	16	96	117
6.	Grapes	3	..	..	1	2	..	1	..
7.	Acid lime	41	38	49	38	50	46	45	49
8.	Malta	..	53	58	..	1	1	..	..
9.	Other Fruits	68	74	14	108	38	19	93	62
Vegetables									
10.	Tapioca	203	153	215	516	471	103	105	112
11.	Sweet Potato	514	328	353	329	512	385	296	662
12.	Cocasia	30	2	9	..	..	..	..	..
13.	Onion	21	11	5	37	6	3	3	5
14.	Brinjal	624	594	689	654	608	433	442	503
15.	Bhendi	300	245	308	222	207	161	266	301
16.	Lab-lab	19	29	39	21	44	23	29	6
17.	Tomato	687	614	554	229	443	553	385	285
18.	Greens	74	86	100	184	147	129	134	101

APPENDIX - 17 *(Cont.)*

Sl. no.	*Area under various crops*	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1985-86*	*1986-87*	*1987-88*	*1988-89*
Spices and condiments									
19.	Chillies	2276	1950	1440	1343	1445	983	799	743
20.	Turmeric	12	2	2	5	8	7	3	11
21.	Coriander	56	34	16	68	30	25	12	11
22.	Tamarind	56	23	78	80	65	62	94	113
Plantation Crop									
23.	Cashewnut	610	565	528	429	577	648	645	710

Source : Assistant Director of Horticulture, Kancheepuram, dated 9 April 1992

APPENDIX - 18

Particulars of progress made under TANWA (Tamil Nadu Women in Agricultural Project)

Sl.no.	Particulars	1986-89		1989-90		1990-91		1991-92	
		Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
1	2	3	4	5	6	7	8	9	10
I. Physical (Nos.)									
1.	No. of trainings imported	16	16	16	16	16	16	16	
2.	No. of trainees undergone training	480	480	480	480	480	480	480	
3.	No. of follow up demonstration	16	16	64	64	64	64	64	
II. Financial (Rs.)									
1.	Stipend	24,000	24,000	24,000	24,000	24,000	24,000	24,000	
2.	Seed demonstration	3,280	2,852	4,165	4,084	8,000	7,699	8,000	
3.	Contingency	3,200	3,523	3,200	3,136	3,200	3,195	3,200	
4.	Seed/Seedlings	..	..	750	646	4,000	3,985	4,000	
5.	Teaching materials	5,760	5,746	5,760	..	5,760	5,760	5,760	
6.	Training and Printing materials	..	..	1,965	790	10,480	10,480	10,480	
7.	Follow-up demonstration	2,080	2,080	2,660	2,568	3,200	3,200	3,200	
	Total	**38,320**	**38,201**	**42,500**	**42,224**	**48,640**	**58,589**	**58,640**	

Source : Deputy Director of Agriculture, Farmers Training Centre, Kancheepuram, report dated 20 June 1991

APPENDIX - 19

Turnover details of the Chengalpattu-MGR District Co-operative Agro Service Society Ltd.

Sl. no.	Year	Income on Custom Hiring	Trading	S & R Manufacturing	Misc. Income	Total Income	Profit during the year	Cumulative Profit/Loss
1	2	3	4	5	6	7	8	9
1.	1973-74	...	...	...	26.31	26.31(-)	4,617.49(-)	4,617.40
2.	1974-75	878.70	28,808.30	11,648.00	4,168.85	35,503.85(-)	29,704.68(-)	34,322.17
3.	1975-76	63,969.35	2,93,277.83	57,760.46	46,461.00	61,468.73(-)	23,368.36(-)	57,600.53
4.	1976-77	55,324.00	5,09,757.78	1,30,286.54	4,691.70	7,00,060.02(-)	34,188.52(-)	91,879.05
5.	1977-78	66,720.53	10,80,596.32	2,93,283.63	17,863.45	1,45,463.93(-)	25,274.53(-)	66,304.52
6.	1978-79	55,269.91	20,66,648.42	2,12,271.13	62,988.97	23,97,178.43(-)	11,055.14(-)	25,251.39
7.	1979-80	24,920.50	12,17,866.46	8,06,054.24	10,442.08	20,59,283.28(-)	34,196.15(-)	59,447.53
8.	1980-81	19,902.00	6,15,936.83	4,19,061.54	7,232.09	10,62,132.71(-)	76,059.13(-)	1,35,506.66
9.	1981-82	19,349.00	5,45,809.00	4,60,537.00	7,364.00	10,33,059.00(-)	18,516.00(-)	1,54,023.00
10.	1982-83	47,096.00	3,37,082.00	4,17,463.00	4,455.00	8,06,096.00(-)	1,758.00(-)	15,22,265.00
11.	1983-84	52,122.00	4,98,804.00	6,28,367.00	20,088.00	11,99,381.00(+)	22,181.00(-)	1,30,084.00
12.	1984-85	33,864.00	6,20,403.00	4,78,858.00	21,134.00	11,54,259.00(+)	12,610.00(-)	1,17,474.00
13.	1985-86	35,318.00	20,47,988.00	7,00,360.00	12,476.00	27,96,137.00(+)	1,05,057.00(-)	12,417.00
14.	1986-87	52,667.00	15,90,440.00	7,85,291.00	2,29,562.00	26,57,960.00(+)	9,069.00(-)	3,348.00
15.	1987-88	73,040.00	19,34,700.00	20,16,350.00	9,93,970.00	50,18,060.00(+)	3,06,290.00(+)	3,02,942.00
April to March								
16.	1988-89	31,630.00	23,80,585.00	8,07,930.00	2,32,362.00	34,52,507.00(+)	1,22,905.00(-)	1,22,905.00
17.	1989-90	1,08,385.00	21,56,433.00	13,02,112.00	...	35,91,440.00(+)	1,57,015.00(+)	1,57,015.00
18.	1990-91	82,765.00	18,45,154.00	29,75,134.00	...	49,03,053.00(+)	1,26,728.00(+)	1,26,728.00

Source: Managing Director, Tamil Nadu Agro-Engineering & Service Cooperative Federation Limited, report dated 19 June 1991

APPENDIX - 20

Tamilnadu Agro Industries Corporation fertiliser sales for the period 1980 to 1991 in Chengalpattu-MGR District

Sl.no.	*Year*	*Name of inputs*	*Qty.*	*Value* (in lakhs)	*No. of beneficiaries*	*Achievement*
1	1980	Fertiliser	1500	30	50	50
2	1981	"	2000	69	60	60
3	1982	"	5000	118	70	70
4	1983	"	4500	100	80	90
5	1984	"	10000	214	120	120
6	1985	"	15000	310	125	125
7	1986	"	9000	191	130	130
8	1987	"	4000	82	125	125
9	1988	"	3000	58	75	75
10	1989	"	6000	114	110	110
11	1990	"	9000	180	120	120
12	1991	"	5000	125	120	120

Source : Chief Engineer i/c, Tamil Nadu Agro Industries Ltd., Madras - report, dated 24 January 1992

APPENDIX - 21

Tamil Nadu Agro Industries Corporation

Agricultural Implements sold in Chengalpattu-MGR District from 1979-80 to 1990-91

Sl.no.	Year	Item sold	No. of beneficiaries	Value Rs.	Achievement Rs.
(1)	1979-80	Cultivator, cage wheel, Tail skid, Magic Stand Trailer, ADV Carts and Power Tiller accessories.	42	1,16,127.11	1,16,127.11
(2)	1980-81	Trailer, Full Cage wheel, Drum type cageweel, Tail skid, wheel changer, Khota Cagewheel, Power Tiller Trailer, Pump Stand, Top hood, Leveller and hitchbreaket.	44	1,72,081.05	1,72,081.05
(3)	1981-82	Trailer, Cagewheel for Tractor Top hood assembly, Cagewheel for Power Tiller, Magic Stand, Belt Pulley, Puddler, Ridger, Pic axe, Trampler, 5-Tyne cultivator, Tail Wheel float, Rotary unit, and 9-Tyne Cultivator.	113	1,61,096.74	1,61,096.74
(4)	1982-83	Power Tiller Tanier Trailer, Trailer, Cagewheel for Tractor, Cultivator, Top hood, Cagewheel for Power Triller, Magic Stand, Tail skid, Gobar Gas Plant, Stand for Trailer, Dryland Weeder, Hitch bracket, Paddy Thrasher Ridger, Weeder, Pic axe, Sickless, Manvetti, Belt Pully, Magic Stand and Primary Pump.	57	4,21,774.32	4,21,774.32

APPENDIX - 21 *(Contd.)*

Sl.no.	*Year*	*Item sold*	*No. of beneficiaries*	*Value* Rs.	*Achievement* Rs.
(5)	1983-84	Cagewheel for Tractor, Cagewheel for Power Tiller, Tail skid, Dryland Weeder, Crow bar, Ridger Weeder with Handle, Pic axe Manvetti, Magic Stand, Bio Gas Holder, Grubbar with Handle.	236	10,65,076.86	10,65,076.86
(6)	1984-85	Tanker, Trailer, Biogas Holder, Trailer, Cagewheel, Cultivator and Tanker.	113	6,32,300.44	6,32,300.44
(7)	1985-86	Bio-Gas Plants, Sprayer	3	17,606.48	17,606.49
(8)	1986-87	Tractor Implements	22	88,957.00	88,957.00
		Power Tiller Implements	57	51,338.69	51,338.69
(9)	1987-88	Tractor Implements	36	3,00,100.80	3,00,100.80
		Power Tiller Implements	33	41,904.03	41,904.03
(10)	1988-89	Tractor Implements	25	52,000.98	52,000.98
		Power Tiller Implements	35	45,900.50	45,900.50
(11)	1989-90	Full Cagewheel, Cart, Hand operated and Bullock drawn Implements, *viz.* Sprayer, Iron plough, Leveller, hand hoe, Manvetti, Growbar, Tarpaulin and Green Manure Trambler.	No. of Farmers about 2000 through Govt. Agri. Dept. under Govt., subsidy scheme	10,98,224.00	10,98,224.00
(12)	1990-91	Manvetti, Crowbar, Sullage Cart.	8	35,587.00	35,587.00

Source : Chief Engineer i/c. Tamil Nadu Agro Industries Corporation Ltd., Madras, report dated 24 January 1992

APPENDIX - 22

Tamilnadu Agro Industries Corporation

Sales of Sunola Edible Oil in Chengalpattu-MGR District from 1984-85 to 1990-91

Sl.no.	Year	Value	
(1)	1984-85	1.651	M.T.
(2)	1985-86	9.751	"
(3)	1986-87	12.540	"
(4)	1987-88	17.925	"
(5)	1988-89	31.730	"
(6)	1989-90	45.855	"
(7)	1990-91	34.080	"
	Total	153.532	M.T.

Source : Chief Engineer i/c, Tamil Nadu Agro Industries Ltd., Madras, report dated 24 January 1992

APPENDIX - 23

Quantity of seeds distributed to farmers from 1980-81 to 1990-91 (MTS)

Year	*Paddy*	*Cumbu*	*Ragi*	*Pulses*
1980-81	1,291	15.70	13.80	81.60
1981-82	1,202	11.60	9.30	88.50
1982-83	1,405	11.10	14.30	73.50
1983-84	2,069	22.20	13.80	102.50
1984-85	1,738	22.50	30.50	108.40
1985-86	1,973	20.30	20.50	120.00
1986-87	1,801	18.70	25.10	284.00
1987-88	1,710	6.00	22.70	256.50
1988-89	2,270	6.80	28.60	313.30
1989-90	3,120	6.00	22.50	80.68
1990-91	2,511	6.23	24.50	79.50

Source : Joint Director of Agriculture, Chengalpattu-MGR District at Madras - report dated 19 March 1992.

APPENDIX - 24

Manures/chemicals, fertilisers distributed to farmers from 1980-81 to 1990-91

Year	*Fertiliser distributed (Consumption)* (IN M.T.S.)		
	Nitrate (N)	*Phosphate (P)*	*Potash (K)*
1980-81	30,171	8,154	6,230
1981-82	32,458	7,820	9,062
1982-83	21,230	8,048	6,440
1983-84	37,365	10,469	8,960
1984-85	39,460	13,437	16,402
1985-86	41,193	13,471	13,188
1986-87	32,000	12,500	12,200
1987-88	43,045	15,640	15,810
1988-89	32,213	12,213	11,945
1989-90	47,348	14,537	23,041
1990-91	38,586	14,905	14,703

Source : Joint Director of Agriculture, Chengalpattu-MGR District, at Madras - report dated 19 March 1992.

APPENDIX - 25

Achievement of the Soil Testing Laboratory, Kancheepuram

Year	Fees collected	Number of samples analysed				Equi-valent Total
		Soil	Water	Plant	Detailed	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1966-67	...	80	...	...	...	80
1967-68	...	8196	...	...	...	8196
1968-69	...	14160	183	...	...	14160
1969-70	...	16934	309	...	...	16934
1970-71	...	25569	161	...	...	25569
1971-72	...	26893	212	...	...	26893
1972-73	...	49000	78	...	...	49000
1973-74	...	72042	191	10	...	72042
1974-75	...	72001	315	...	...	72001
1975-76	...	72340	467	...	...	72340
1976-77	...	72450	180	...	...	72450
1977-78	53158	55316	85	...	1076	53243
1978-79	56984	63038	73	...	1000	86371
1979-80	52672	56388	77	...	1110	75378
1980-81	64137	59040	70	...	340	68108
1981-82	37401	43953	84	...	44	66270
1982-83	28683	22351	88	...	140	24770
1983-84	32025	27277	95	...	...	27372
1984-85	58204	54183	154	...	...	56400
1985-86	41556	40977	48	...	...	46480
1986-87	19905	37527	2625	...	...	64851
1987-88	18283	19908	1954	...	323	62981
1988-89	38289	31	3888	680	334	92277
1989-90	58284	35098	3409	320	651	93175
1990-91	50684	42851	2754	150	...	86081

Source : Assistant Soil Chemist (STC) Kancheepuram, report dated 17 June 1991

APPENDIX - 26

Achievements of the Mobile Soil Testing Laboratory, Kancheepuram

Year	Achievement		
	Soil	Water	Total
(1)	(2)	(3)	(4)
1980-81	3996	...	3996
1981-82	3971	4	3975
1982-83	4035	40	4075
1983-84	6856	...	6856
1984-85	13441	4	13445
1985-86	14001	201	14202
1986-87	11310	402	18029
1987-88	12183	366	18311
1988-89	14327	368	18007
1989-90	13009	500	18009
1990-91	13501	269	18074

Source : Assistant Soil Chemist (STL) Kancheepuram, report dated 17 June 1991

APPENDIX - 27

Achievement of the Pesticides Testing Laboratory, Kancheepuram, from 1970-71 to 1990-91

Sl. no.	*Year*	*Number of samples received*	*Number of samples analysed*	*Number of standard samples*	*Numbers found mis-branded*	*Percentage of brand samples*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
1.	1970-71	210	120	114	6	5.0
2.	1971-72	1088	931	805	126	13.5
3.	1972-73	543	733	691	42	5.7
4.	1973-74	1119	1157	1051	94	8.1
5.	1974-75	1654	1489	1337	152	10.2
6.	1975-76	2082	1734	1615	119	7.0
7.	1976-77	2222	1812	1706	106	5.8
8.	1977-78	2689	1912	1813	116	6.0
9.	1978-79	2149	2040	1957	83	4.06
10.	1979-80	2610	1876	1793	83	4.0
11.	1980-81	2473	1508	1455	53	3.52
12.	1981-82	2610	1479	1356	123	8.31
13.	1982-83	2361	1549	1455	94	6.06
14.	1983-84	1527	1519	1460	59	3.88
15.	1984-85	1395	1081	1038	43	4.0
16.	1985-86	1356	867	846	21	2.0
17.	1986-87	1492	1458	1443	15	1.03
18.	1987-88	1334	1309	1273	36	2.75
19.	1988-89	1638	1528	1481	47	3.08
20.	1989-90	1606	1586	1509	77	4.86
21.	1990-91	1535	1519	1473	46	3.03
	Total	35693	29218	27677	1541	5.57

Source : Agricultural Chemist, Pesticides Testing Laboratory, Panjupet, Kancheepuram - report dated 25 June 1991.

APPENDIX - 28

Number of sanctioned strength; actual strength and results achieved from 1969-70 to 1990-91 in the Agricultural School, Kancheepuram

Sl. no.	*Year*	*Sanctioned strength*	*Actual strength*	*Number of students passed*	*Percentage of pass*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1.	1969-70	20	20	19	95
2.	1970-71	18	18	18	100
3.	1971-72	20	20	19	95
4.	1972-73	20	20	20	100
5.	1973-74	20	20	20	100
6.	1974-75	25	25	25	100
7.	1975-76	30	30	30	100
8.	1976-77	29	29	27	93
9.	1977-78	30	30	29	97
10.	1978-79	30	30	29	97
11.	1979-80	27	27	27	100
12.	1980-81	30	30	30	100
13.	1981-82	21	21	21	100
14.	1982-83	20	20	20	100
15.	1983-84	21	21	21	100
16.	1984-85	25	25	20	80
17.	1985-86	25	25+5	28	93
18.	1986-87	25	25+2	25	93
19.	1987-88	25	25	25	100
20.	1989-90	25	25+1	26	100
21.	1990-91	25	25	24	96

Source : Agricultural Office (School), Agricultural School, Kancheepuram - report dated 25 November 1991.

APPENDIX - 29

Sale Proceeds of the TAPCO Marketing Unit, Chengalpattu

Year	*Eggs*	*Chicken meat*	*Feed*	*Chicks*	*Birds*	*Breeding birds*
1979-80	8,61,710.28	13,245.56	9,74,374.00	...	73,170.00	...
1980-81	6,84,913.84	33,328.15	16,13,644.05	...	81,387.00	...
1981-82	8,93,494.50	48,518.03	17,15,893.07	...	1,05,103.00	...
1982-83	13,42,224.20	62,566.21	20,36,385.00	5,24,567.50	4,53,137.40	...
1983-84	13,50,105.74	39,315.55	12,94,499.03	2,10,945.15	5,32,273.46	...
1984-85	11,77,286.03	48,318.99	12,68,951.27	3,62,739.90	10,99,972.63	1,51,532.40
1985-86	9,23,828.60	...	11,68,531.32	3,74,492.95	5,56,525.33	...
1986-87	10,55,242.92	13,005.64	7,90,480.28	2,68,462.00	5,27,657.65	...
1987-88	5,98,007.64	12,950.20	4,48,912.76	3,32,653.00	6,67,962.82	...
1988-89	4,56,382.00	59,256.00	4,19,339.85	2,60,358.00	3,95,104.87	...
1989-90	42,19,518.18	51,427.00	3,12,288.20	6,36,619.10	4,93,248.95	...
1990-91	92,95,894.55	508.80	6,73,579.55	4,78,560.50	3,18,615.15	...

Source : Managing Director, TAPCO, Madras - report dated 13 March 1992.

APPENDIX - 30

Activities of the Farm Training Centre

Sl.no.	*Training Programme*	*1985-86*	*1986-87*	*1987-88*	*1988-89*	*1989-90*	*1990-91*	*1991-92*
1.	Dairy	5	5	6	14	5	3	8
2.	Poultry	11	14	16	14	15	12	8
3.	Piggery	4	4	2	2	2	2	2
4.	Sheep and Goat	...	1	3	2	3	...	...
5.	Rabbits	...	1	2	2	11	10	3
6.	Others	2	1	...	2	3	26	1
Farmers Trained :								
	Men	384	381	417	524	637	733	489
	Women	32	67	169	168	396	291	168
	No. of days during which training held	92	92	119	136	141	142	95
	Mass Contact Programme	10	12	2	2	1	1	...

Source : Registrar i/c, Tamil Nadu Veterinary and Animal Sciences University, Madras - report dated 17 November 1992

APPENDIX - 31

Tamil Nadu Co-operative Marketing Federation Ltd.

Details of overall performance of TANFED in Tamil Nadu (except Thanjavur and Nilgiris Districts in the distribution of inputs) and the share of operation in the Chengalpattu M.G.R. District from 1988-89 to 1990-91

Sl. no.	Activity	1988-89			
		State total Achievement		Chengalpattu-MGR District	
		Quantity	Value	Quantity	Value
(1)	(2)	(3)	(4)	(5)	(6)
1.	Fertilizer distribution	2,63,782	5,648.00	22,703	470.53
2.	Agricultural marketing	8,231	601.88	10	0.25
3.	Pesticides distribution	..	187.83	..	27.35
4.	Seeds distribution	..	9.27	..	0.57
5.	Agricultural implements distribution	..	4.98	..	0.44

APPENDIX - 31 *(Contd.)*

Quantity (in tonnes) **Value** (Rs. in lakhs)

1989-90				*1990-91*			
State total	*Achievement*	*Chengalpattu M.G.R. District*		*Total*	*Achievement*	*Chengalpattu M.G.R. District*	
Quantity	*Value*	*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*
(7)	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*
3,09,777	6,813.00	23,211	465.32	3,36,662	7,609.90	22,966	523.36
10,979	888.11	127	10.82	12,518	1,253.52	39	4.55
..	247.41	..	36.77	..	216.03	..	30.50
..	15.07	..	1.99	..	21.19	..	4.77
..	12.16	..	0.08	..	11.19	..	1.15

Source : Special Officer, Tamil Nadu Co-operative Marketing Federation Limited, Madras, report dated 19 November 1981

APPENDIX - 32

Talukwise details of tanks maintained by P.W.D.

(Both System tanks and Non-System tanks)

Sl.no.	*Name of Taluk*	*No. of tanks*	*Ayacut* (in acres)
1.	Kancheepuram	112	50578
2.	Uthiramerur	70	19569
3.	Sriperumbudur	92	31013
4.	Madurantakam	171	38054
5.	Cheyyur	115	26578
6.	Chengalpattu	207	57522
7.	Ponneri	132	41017
8.	Gummidipoondi	86	25069
9.	Saidapet	77	17089
10.	Tiruvallur	123	30041
11.	Uthukottai	64	19667
12.	Tiruttani	70	18858
13.	Pallipattu	35	7546
	Total	1354	382601
	System tanks		
	Palar System	82	25653
	Cheyyar	7	6564
	Surattapalli	15	6188
	Chembarambakkam	1	13223
		105	51628
	Grand Total	1459	434229

Source : Chief Engineer (Irrigation) PWD, Madras - report, dated 2 November 1989

APPENDIX - 33

Total number of minor Irrigation tanks having ayacut area of below 100 acres
(Panchayat Union wise)*

Sl. no.	*Name of the Panchayat Union*	*No. of tanks below 100 acres*	*Total ayacuts*
I.	**Chengalpattu Division**		
1.	Acharappakkam	106	4682
2.	Chithamur	69	3417
3.	Lathur	22	373
4.	Madurantakam	153	5894
5.	Kattankolathur	101	3729
6.	Thirukalikundram	93	3056
7.	Thirupporur	93	1648
	Total	637	22789
II.	**Kancheepuram Division**		
8.	Kancheepuram	91	3377
9.	Walajabad	78	2798
10.	Uthiramerur	124	5481
11.	Sriperumbudur	93	2405
12.	Poonamallee	20	695
13.	Kundrathur	64	78
	Total	470	15134
III.	**Saidepet Division**		
14.	St. Thomas Mount	89	2666
15.	Villivakkam	40	1657
16.	Puzhal	7	338
17.	Sholavaram	33	1144
18.	Gummidipoondi	113	1128
19.	Minjur	113	2883
	Total	395	9816
IV.	**Tiruvallur Division**		
20.	Tiruvallur	46	1111
21.	Kadambathur	53	2145
22.	Ellapuram	58	2940
23.	Poondi	100	3193
24.	Tiruttani	31	1392
25.	Thiruvalangadu	59	3039
26.	Ramakrishnarajupet	26	1204
27.	Pallipet	47	2239
	Total	420	17263
	District Total	1922	65002

* District Collector, Chengalpattu-MGR District at Kancheepuram, report dated 7 June 1993

APPENDIX - 34

Taluk-wise distribution of area sown and area irrigated to the gross area sown and irrigated and its intensity in the district during 1987-88*

Sl. no. (1)	Name of the Taluk (2)	Gross area sown (3)	Net area sown (4)	Cropping intensity Col.3/4 (5)	Gross area irrigated (6)	Net area irrigated (7)	Irrigation intensity Col.6/7 (8)
1.	Kancheepuram	34436	27382	1.26	27667	21060	1.31
2.	Uthiramerur	17144	15353	1.12	10210	8625	1.81
3.	Ponneri	35390	30006	1.18	29380	25957	1.13
4.	Gummidipoondi	21472	20802	1.03	14577	13977	1.04
5.	Tiruvallur	33622	26020	1.29	29295	25030	1.17
6.	Uthukottai	20291	16116	1.26	16700	13295	1.26
7.	Tiruttani	17044	14990	1.41	15118	13078	1.16
8.	Pallipat	9107	6755	1.35	6215	4262	1.46
9.	Sriperumbudur	47792	32795	1.46	38183	24178	1.68
10.	Saidapet	13093	10836	1.21	9335	7921	1.18
11.	Chengalpattu	38837	32679	1.91	31398	27639	1.14
12.	Madurantakam	26838	23406	1.15	19145	16002	1.20
13.	Cheyyur	23643	20474	1.15	15254	12504	1.22
	District	338709	277578	1.22	262477	213528	1.23

* Taluk profile of Irrigation Statistics Chengai-Anna District 1987-88, Director of Statistics, Madras, Department of Statistics

APPENDIX - 35

Taluk-wise details, area-irrigated for paddy and cereals during 1987-88*

Sl. no.	Name of the Taluk	Paddy			Total cereals		
		Area sown	area irrigated	Irrigation ratio	Area sown	Area irrigated	Irrigation ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Kancheepuram	27404	24469	0.89	28091	24845	0.88
2.	Uthiramerur	8035	7590	0.94	8396	7637	0.91
3.	Ponneri	25594	22492	0.88	25832	22635	0.88
4.	Gummidipoondi	14046	12631	0.90	14252	12701	0.89
5.	Tiruvallur	21872	20168	0.92	22842	20475	0.90
6.	Uthukottai	12714	11351	0.89	13293	11662	0.88
7.	Tiruttani	6852	6708	0.98	7882	7530	0.96
8.	Pallipat	2985	2671	0.89	3809	3121	0.82
9.	Sriperumbudur	36690	33254	0.91	37564	33413	0.89
10.	Saidapet	10330	8706	0.84	10401	8748	0.84
11.	Chengalpattu	25070	23840	0.95	25311	24031	0.95
12.	Madurantakam	16539	15024	0.91	16817	15198	0.90
13.	Cheyyur	11074	10769	0.97	11499	11025	0.96
	District Total	219205	199671	0.91	225987	203021	0.90

* Taluk profile or Irrigation Statistics-Chengai Anna District, 1987-88, Director of Statistics, Government of Tamil Nadu, Madras

APPENDIX - 36

Taluk-wise details of area sown and area irrigated under food and non-food crops in 1987-88

Sl. no.	Name of the Taluk	Food Crops Area sown	Food Crops Area irrigated	Food Crops Irrigation ratio	Non-food Crops Area Sown	Non-food Crops Area irrigated	Non-food Crops Irrigation ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Kancheepuram	28971	25578	0.88	5465	2089	0.38
2.	Uthiramerur	10713	9643	0.90	6431	567	0.09
3.	Ponneri	29089	25460	0.88	6301	3920	0.62
4.	Gummidipoondi	15537	12823	0.83	5935	1754	0.30
5.	Tiruvallur	25002	21981	0.88	8620	7314	0.85
6.	Uthukottai	14161	12283	0.87	6130	4417	0.72
7.	Tiruttani	9351	8432	0.90	7693	6686	0.87
8.	Palliput	5379	3886	0.72	3728	2329	0.62
9.	Sriperumbudur	39119	34293	0.88	8679	3890	0.45
10.	Saidapet	11327	9085	0.80	1766	250	0.14
11.	Chengalpattu	27274	25595	0.94	11563	5803	0.50
12.	Madurantakam	18269	16386	0.90	8569	2759	0.32
13.	Cheyyur	12369	11526	0.93	11274	3728	0.33
	District Total	246555	216971	0.88	92154	45506	0.69

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CHAPTER - 5
INDUSTRIES

Chengalpattu-MGR district, which surrounds Madras city, is a shadow region of Madras Metropolitan area. In view of its advantageous location, this district commands requisite industrial climate and attracts entrepreneurs from different parts of the country. The whole of Saidapet taluk and parts of Ponneri, Tiruvallur, Sriperumbudur and Chengalpattu taluks of the district come under the Madras Metropolitan area[1]. Availability of power, transport and communications, water, labour, marketing, proximity of a major port and other infrastructural facilities pave way for springing up of a large number of industries in the district. Major industries such as automobiles, transport, metallurgical, electrical, engineering, chemicals, fertilisers, oil refinery etc., are concentrated[2]. These industries contribute for spreading of several ancillary industries and also for the setting up of a number of industrial estates in the district.

Places like Thiruvothiyur, Ennore, Manali, Villivakkam, Ambattur, Avadi, Tiruvallur, Gummidipoondi, Sriperumpudur, Maraimalainagar and Vandalur have become industrial towns and many major, medium and small scale industries have emanated in other places as well. The Grand Southern trunk road, the Grand Northern trunk road, the Thiruvothiyur high road, the Avadi road, the New Avadi road, the Madras Tiruvallur high road, the Velacheri road and the Poonamallee high road are the important highways branching off in different directions from Madras city and running through Chengalpattu-MGR district. The areas adjoining these highways are fast turning into industrial belts, since a large number of factories and factory sites are situated along them[3].

Old Time Industries

The old time industries in the district were weaving, working in metals, salt manufacture, manufacture of spirits, sea fishery, basket making, bricks and tiles making, paper making, Abkar planting of casuarina groves for fuel, dyeing, oil extraction and indigo manufacture[4]. A brief description of some of the old time industries and the reasons for their decay are given as under:

Weaving

Handloom is an important traditional craft of India. The handloom industry is of particular significance to Tamil Nadu. Weaving was an important cottage industry and it occupied about 35,662 persons during 1880's. The muslin of Arni, the Chintzes of Sadras, the dangari and men and women's cloth made at Kancheepuram[5], which once formed staples encouraged by the East India Company, and on which not a little of their trade depended, are now almost things of the past. They had been elbowed out of the market in the competition with European fabrics, Manchester goods especially, and

in regard to muslins and Chintzes, the very ability to make them had dried out. The weaving community had fallen into great indigence, for although a very industrious set of people, men, women and children all working together, they found that they could not compete with machinery[6]. The home-made cloths however still hold their own in competition with foreign goods.

Working in metals

After weaving, working in metals appeared to be the most widespread native industry. Working men in metals included blacksmiths or iron workers, gold and silver smiths, brass and copper smiths, and workers in tin[7]. This was almost the exclusive employment of certain divisions of the artisans.

Blacksmithy

Metals were manufactured in various ways to cope with local demands. There was a smith in nearly every village, who mended carts, made and repaired agricultural implements such as sickles, mamoties, shoes bullocks etc[8]. Some of these men who were clever and industrious in their work left the traditional work and joined the Railway or Coach-builders' workshops at Madras, and the rest were unable to compete with the modern methods of blacksmithy.

Goldsmithy

Workers in gold and silver abound, especially in temple towns. Articles of personal jewellary for men and women, jewels and other ornaments for idols, and silver cooking and eating utensils for the wealthy were made by them. The workmanship was however crude, and exhibited little artistic skill. Coppers, brass and bell-metal articles were made by a sub-division of the same caste as works in iron. Posts, chatties, plates, lamps, trays, spoons, bells and other things required for domestic use and for devotion, as well as idols and ornaments were manufactured in considerable quantities. Introduction of European methods of smelting iron in various parts of the state posed a problem to this domestic industry in course of time.

Salt manufacture

Chengalpattu-MGR district is a coastal district having a coastal line to the extent of 225 km. The manufacture of salt was an important old time industry which gave employment to a large number of people on the coast[9]. Salt was manufactured here solely by means of solar evaporation. The only requirements necessary to allow a factory being established was the existence of a strata of tough impermeable clay, or the means constructing one, and of a sufficient supply of brine. The former almost invariably existed in salt swamps, the process which created these large low flats also favouring the deposit of stiff tenacious mid. The brine made use of was derived either from the sea, or from brine-pits and wells. The brine derived from the sea was common in Chengalpattu division where the tidal backwaters usually

furnished the source of supply[10]. Each factory was covered with a network of small channels, all opening into one or more main channels, communicating with the backwater or sea. The factories of the Chengalpattu-MGR district were not conveniently situated as places for the storage and sale of salt, almost the whole of their product was conveyed to Madras by canal, at the expense of government, and stored in a depot close to the Madras Railway and connected therewith by a siding. The sale of salt was a monopoly of government. Under the monopoly system salt could only be manufactured for sale to government and under the supervision and control of its officers. The right to manufacture was confined to certain areas called factories, and to the registered owners or holders of definite portions of the factories called sets of pans. Salt was manufactured for government chiefly by mirasdars having hereditary rights to the manufacture[11].

The Salt department was under the control of a Commissioner, assisted by two Deputy Commissioners and seven Assistant Commissioners[12]. The area comprising the Chengalpattu, Nagapattinam and Tirunelveli and central division of the Madras Presidency was under one Deputy Commissioner, - the work in the last being almost wholly preventive. The duties of the Deputy Commissioners and of Assistant Commissioners under them, consisted / principally in the inspection and supervision of the work of the factory and preventive establishments and of the manufacture and sale of salt. Under section 6, of the General Act VIII of 1878, Salt Commissioner was appointed as Customs Collector and in the Revenue Notification, *Fort Saint George Gazette,* dated 25 April 1882, price was fixed for salt sold at Kovalam for export, exclusive of duty. Under section 45 of Madras Act VI of 1871 (Salt Excise), conditions of licence were laid down and in the Revenue notification, *Fort Saint George Gazette,* dated 13 March 1883, the Act was extended to Madurantakam taluk in the Chengalpattu-MGR district[13]. (Please refer Maclean's Manual of the Administration of the Madras Presidency, Vol.I, pp.436-444 for more details on 'Salt'). Ennore and Kovalam were two circles in the district[14]. Salt factories were located at Puzhudhivakkam, Athipattu and Vallur in the Ennore circle and Vadasemman Chery, Kovalam and Cheyyur in the Kovalam Circle.

The important salt producing centres in the district are Athipet, Thillai, Kovalam, Cheyyur and Chunampet[15]. Production of salt in the district and in Tamil Nadu for the years 1986,1987 and 1988 are shown below:

Year	*Chengalpattu-MGR*	*Tamil Nadu*
1.	2.	3.
	(IN M.T)	
1986	1,24,575	20,96,798
1987	1,41,153	22,66,495
1988	77,780	19,20,971

The distribution of salt in the district for the years 1986,1987 and 1988 are as follows:

Year	*Human consumption*	*Industrial use*
1.	2.	3.
	(IN M.T)	
1986	74,810	37,210
1987	78,425	33,021
1988	76,442	18,392

Paper making

In the later part of 19th Century, paper was manufactured in Chengalpattu district and its manufacture was for the most part done by hand and the process was therefore rude and the paper made was coarse. The materials used in the manufacture were chiefly waste paper, old rags, gunny bags, hemp and aloe. Plantation leaves were also used in some places. There were other materials available, from which good quality paper could be manufactured. The materials are such as cotton, rice straw, bamboos, refuse of sugarcane and grasses of various descriptions; but they were not used for want of suitable machinery. Since most part of the manufacture was done by hand, the industry had no prospect of manufacture, until machinery was introduced[16].

Dyeing

The dyeing of cloth and thread employed a limited number of people. The pigments were generally obtained from indigo and wild shrubs found in the jungles.

Basket making

Basket making and mat weaving was obviously one of the very oldest of man's creations done by joining grass with grass and interlacing leaves with minimum tools. Baskets were made of bamboo, palm leaves and various varieties of rattan and cane. At Pulicat, 40 km. north of Madras, baskets, plain or coloured, were made by plaiting the leaves of the palmyra, and also of rattan[17].

Indigo

Indigo was grown and manufactured in small extent, but the industry did not grow well due to want of raw materials. The vats and godowns, which were the private property of ryots, and were to be seen scattered over the Tiruvallur and Kancheepuram taluks, were often found abundant[18].

Bricks manufacturing

Brick manufacturing is also one of the old time industries. Brick manufacturing industries are mainly located in Saidapet and Sriperumbudur

taluks because of availability of raw materials and also proximity to Madras for good and steady marketing[19].

Oil

Oil was extracted from various roots, such as groundnut and plants like gingelly and castor and fruit of neem or margosa tree. The motive power employed was a yoke of bullocks and the well known native oil mill seen at work in nearly every village of any size[20].

Other old time industries

Sea fishery was the most important industry. The industry was not under any official control and the yield from the industry was also negligible. Spirit was manufactured for local consumption and casuarina groves were planted for producing fuel[21].

Causes of decline of old time industries

The production of articles of necessity, such as the native cloths, suffered most by direct European competition[22]. Industries in articles of luxury, such as wood-carving, carpet weaving and ornamental metal work had been affected to some extent by the decline of many old native zamindaries and states, but more from the spread of European education and ideas, which led many of the better class of natives to throw aside their national dress and decorated their houses in a pseudo-European style with glaring Brussels carpets and ill-designed furniture, and either to look upon all native art as beneath their notice or with condescending benevolence to supply the workmen with designs called from the pattern books and catalogues of European manufacturers. In this way, the native industries had suffered as much by loss of prestige as by European competition or from any other cause.

Rise of new industries

Since the beginning of Planning in India (1951), the promotion and development of industries has been accorded the highest priority in the government's economic programmes. The industrial strategy envisaged in the Seventh Plan was to strengthen industrial base and harness entrepreneurial talents to bring about rapid growth of industry. Availability of power, water, proximity of major port, existence of communication, marketing, other infrastructural facilities and concessional facilities and government owned corporations like SIPCOT, TIDCO, TIIC, TANSIDCO, TANSI etc., encourage the location of large, medium and small scale industries in the district.

Power

Electric power is the most potent catalyst for the speedy socio-economic development of the country and it shares a common goal with all

economic and social programmes to promote long term development. Electricity is no more a luxury enjoyed by the privileged class in towns. The intensive rural electrification has helped the expansion of irrigation facilities[23], increased agricultural production and the development of weaker sections of the society and backward areas in the state. Power is the enabling factor in the growth of large, medium and small scale industries and it is a major input.

Power development in the early stages was predominently hydel. Power generation until about 1908 was confined mainly to a few tiny plants in tea estates run on water power and to the small hydro installations at Katteri in the Nilgiris supplying power to the hill station of Uthagamandalam. The Madras Electric Supply Corporation was the first electric supply industry, licensed in the state. The corporation commenced supply in the city of Madras in 1909 with a Thermal Plant of 1500 KW capacity[24]. The Government Electricity Department was formed in 1927. Since then, there has been rapid development in the generation and utilisation of electric power in the state. By the end of Second Plan period, it became clear that with preponderant hydel capacity, the grid was vulnerable in the years of poor rainfall and the situation was corrected only by establishing thermal plants. Ennore Thermal Station with a capacity of 450 MW was established in 1977 next to the Neyveli Thermal Station. The Ennore Thermal Power Station is a public sector undertaking run by the Government of Tamil Nadu.

Power distribution in the Chengalpattu-MGR District

The power distribution in the Chengalpattu-MGR district dates back to pre-independent era. Electric power was distributed to a portion of the Chengalpattu-MGR district, situated on the outskirts of Madras city. Power was fed from the Basin Bridge Thermal Power Station. Power distribution in the district in the real sense was started from 1947 onwards when a 110 KV sub-station was established at Korattur and was connected to Mettur Hydro Electric Power Station. Thus the hydro power was also able to flow into Chengalpattu-MGR district area and the load development in the district picked up gradually. There are two power stations in the district, with thermal power in Ennore and atomic power in Kalpakkam.

The Ennore Thermal Power Station was the first thermal station established in the district. The thermal station utilises coal transported from Singareni Collieries in Andhra Pradesh for power generation. The total installed capacity of the power station is 450 MW and it generates 18,36,848 MWH electricity[25]. The unit-wise capacity and the date of commissioning are as follows:

Sl. no.	*Unit number*	*Capacity (M.W)*	*Date of commissioning*
1.	I	60	31 March 1970
2.	II	60	14 February 1971
3.	III	110	17 May 1972
4.	IV	110	26 May 1973
5.	V	110	1 December 1975
	Total	450	

The demand for power in the State is steeply increasing and it is high in and around Madras and Chengalpattu-MGR district. To cope with this demand, the Electricity Board is establishing another thermal power station with the capacity of 630MW at Ennore and Puzuthivakkam villages north of the existing Ennore Thermal Power Station. The estimated cost of this project is Rs.720.92 crores. The Asian Development Bank has sanctioned a loan of 150 million US dollars (Rs.185/- crores approximately) towards purchase of machineries for the first two units of this station. This project is expected to function during Eighth Five Year Plan period.

Rural Electrification

There has been an upward trend in the consumption of electricity simultaneously with the growth of power plants and network of transmission and distribution lines are laid to every nook and corner of the state. Tamil Nadu has made rapid strides in rural electrification. The district has a well developed distribution network connected to the State Electricity Grid and Southern Power Distribution Grid[26]. All the existing 74 towns, 1778 villages, 2445 hamlets and 2175 Adi-dravidar colonies in the district have been provided with electricity under the Crash Programme launched in October 1969 to electrify all villages and hamlets by the end of 1972 by providing street lights[27]. It is a matter of gratification that the Board started the work on 1 November 1969 and completed electrification process in the district. Apart from this, 81,838 agricultural wells have been energised as on 31 March 1987. Electrical energy is supplied free of cost to small farmers while it is at a flat rate of Rs.75/- per horse power per year to other farmers. Apart from this, 1,02,154 hut dwellers in the district enjoy free electricity under the scheme of 'One light to one hut' launched by the State Government in the year 1979.

The network system for distribution of power in the district is well organised. Forty nine sub-stations with a total capacity of 1728.75 MVA are utilised for distribution of power to about 6,23,215 consumers of various categories. With the intention of improving economy and providing employment, nearly 24,523 industrial connections have been given in the

district as on 31 March1987. The categorywise consumers and details of existing sub-stations in the district are given in *Appendices 1 and 2*. The district having been totally electrified has a consumption pattern (Units) as follows[28]: The consumption of electricity by low tension and high tension lines are 97215054 and 103115300 respectively. The power for agriculture is 441425160 units. The per capita consumption of power in the district is estimated at 182 units.

Power Sub-station, Thirumazhisai

A New 110 KV sub-station has been commissioned at Thirumazhisai in Chengalpattu-MGR district on March 30, 1991. This forms part of augmentation and upgradation project of Madras Metropolitan Area mainly to cater to the industrial loads developing around Thirumazhisai and to improve the low voltage condition. The total estimated cost of the sub-station is Rs.179.19 lakh. The station has been commissioned with one 10 MVA Power Transformer.

Atomic Energy Programmes at Kalpakkam

In 1962, the coastal village Kalpakkam, 6 km. South of Mamallapuram and about 55km. from Madras, was chosen as the site for India's third atomic power station. Kalpakkam met the requirements fully-plenty of sea water for condenser cooling, adequate fresh water from Palar river, rocky soil to provide a strong foundation, nearness to a load centre, low density of population in the immediate vicinity, availability of construction materials like sand and aggregates close by and the advantages of a location at a reasonable distance from the city of Madras. With the cooperation provided by the state government, it was possible to complete site investigations by 1964 and land acquisition by 1966. The 900 hectares of land acquired for plant construction formed part of the villages of Kalpakkam and Edaiyur. The land was mostly non-agricultural, about 500 families were rehabilitated, 100 of whom being fishing families, were resettled on the seacoast at New Kalpakkam, north of Mamallapuram.

Construction of the diaphragm wall and foundation work for the Ist unit of Madras Atomic Power Station (MAPS) began in 1967. Construction of the main plant building commenced in 1970. The plant design has many unique features. These include a 470 m. long tunnel under the seabed designed and built with indigenous knowhow, a containment building of prestressed concrete design, - the first in the country - and an indoor switchyard. The tunnel obviated the need for frequent dredging operations associated with open channel type structures for seawater intake.

The MAPS reactors built at a cost of about Rs.400 crore are indigenous with only about 12 per cent foreign exchange content. The first unit of the power station was completed in 1983 and was opened by late Prime Minister Indira Gandhi in July that year. The second unit was inaugurated by the late

Prime Minister Rajiv Gandhi in December 1985. Together, these two reactors have been feeding on average about two billion units annually into Tamil Nadu grid, with an average capacity factor of 60 per cent. The reactors have proved their dependability by providing power when hydel generation in the state was affected by poor monsoons and without the anxiety about the daily supply of fuel as in coal fired power stations. A part of the warm sea water discharged from the condenser of the power station is pumped to the Kovalam salt pans located 16 km. to the north. This has helped to revive the production of salt in this region.

In March 1971, work on the construction of a Fast Breeder Test Reactor was commenced. While the design of this reactor was based on that of the French Research Reactor known as Rapsodie, extensive additions and modifications were incorporated to make the FBTR a fullfledged test bed. Important among these are the addition of a steam generator and turbine to acquire valuable experience in power generation and the use of thorium oxide outside the core of the reactor to permit production of uranium 233, by transmutation of thorium. It was late Dr. Vikram A. Sarabhai, the then Chairman of Atomic Energy Commission, who sowed seed for this reactor, and because of his initiative, this project was taken up. A fast reactor is one in which a moderator is not used, the chain reaction being sustained by the fast moving fission neutrons. It is, therefore, necessary to use fuel with higher concentration of fissile materials than in thermal reactors. If properly designed, the fast reactor can be used to convert fertile materials into fissile materials to such an extent that it produces more fissile materials than it consumes during operation-a process known as breeding. Moreover, a tonne of fast reactor fuel yields 10 times more energy than a tonne of fuel used in thermal reactors, in a single cycle.

Liquid sodium has been identified as the coolant for the fast reactor and is currently used in all fast reactors around the world. While the design of fast reactors is an exacting task in many respects, it also offers considerable advantages over thermal reactors in safety aspects- a consideration of utmost importance. Environmental impact of a Fast Breeder Reactor (*i.e.* cumulative radiation exposure of plant personnel and also the general public) is one or two orders less than that of a comparable capacity heavy water reactor. It may be recalled that radiological impact of MAPS reactors is already well below the permissible limits. Moreover FBRs can be designed to safely shutdown and the decay heat will be removed by natural convection without any action of the reactor control system and without availability of on-site or off-site power. And this will further enhance the safety of FBRs.

In keeping with the emphasis on self-reliance, fabrication of almost all the major components for the FBTR was undertaken indigenously. A large number of Indian industries have participated and contributed significantly in building this reactor. The Fast Breeder Test Reactor (FBTR) attained for

the first time nuclear criticality in October 1985 with a mixture of plutonium and Uranium Carbides. This mixture has the advantage that it can facilitate a high rate of breeding *i.e.*, production of new fuel.

While construction of the Fast Breeder Test Reactor was proceeding, laboratories and facilities were established at Reactor Research Centre (RRC) for Research and Development programmes in reactor engineering, sodium technology, metallurgy, radiochemistry, fuel reprocessing, safety research, material sciences and instrumentation. These laboratories have made Kalpakkam a Centre of excellence in the Southern Region. India today ranks among eight countries in the world, USA, UK, USSR, France, Germany, Japan and China are the other seven countries engaged in the development of fast breeder reactors, with an active and broad based research and development programme for the development of fast breeders. The activities at Reactor Research Centre (RRC) - renamed as Indira Gandhi Centre for Atomic Research (IGCAR) on 16 December 1985 are now directed at meeting the challenge of designing and constructing a 500 MW Prototype Fast Breeder Reactor (PFBR) by the turn of this century. This reactor is to be located at Kalpakkam. The activities of Indira Gandhi Centre for Atomic Research (IGCAR) are dealt with in detail under the caption "Indira Gandhi Centre for Atomic Research"

PFBR is a pool type reactor with an integrated primary coolant circuit. The core, intermediate heat exchangers, primary sodium pumps and the discharge pipes from the pumps taking sodium back to the core are all located inside a pool of sodium contained in a large vessel. This design enhances the system safety by precluding a loss of coolant accident. Besides, it also facilitates cooling of the reactor after shutdown by natural circulation even if the pumps are not available. The scaling up of design from FBTR to PFBR is quite large about 30 times in terms of power output. Further, the manufacturing requirements of components for sodium cooled reactors are stricter than for water cooled reactors. The PFBR project is by far the most challenging power project to be undertaken by the Department of Atomic Energy.

Work on the Kalpakkam Reprocessing Plant (KARP) has progressed well. The primary purpose of this plant is to reprocess the spent fuel from the reactors of Madras Atomic Power Station and make plutonium fuel available for the PFBR. The design of this plant is based on the rich indigenous experience accumulated from the construction and operation of the first demonstration plant at Trombay and the first industrial plant at Tarapur. The KARP plant also includes independent facilities for processing of the used fuel from FBTR. The flow sheet for this operation has been developed as part of the R&D activities of IGCAR in the field of reprocessing fast reactor fuel. It incorporates special features which take into account the considerably higher concentrations of fissionable and radioactive materials present in such fuel.

As a first step in the harnessing of the energy potential with thorium resources, a research reactor has been set up at Kalpakkam which operates with fuel derived from thorium. This fuel is a fissionable isotope of Uranium known as Uranium233. Like plutonium, this substance does not occur in nature but is produced by transmutation of natural thorium upon irradiation in a nuclear reactor. This will be the first reactor of its kind in the world. The quantity of fuel needed to be charged into the reactor is a mere 550 grams - the lowest for any research reactor. The reactor is to be used primarily as a source of neutrons for radiography, neutron activation analysis and radiation physics experiments. The heat that will be generated in the reactor is only 30 KW and is easily removed by natural circulation of water. The reactor provides a good example of a design that is inherently safe.

R & D work at Kalpakkam is well documented through scientific papers. The Kalpakkam Centre with its unique composition of a power station, a major R & D Centre, a test reactor and a reprocessing plant all at the same site, stands out from the other sites of the Department of Atomic Energy. This co-location of the different facilities has enabled specialists with different orientations namely plant design, R & D and plant operation to work together for a common purpose. Each of these groups has benefited considerably from interaction with the others. This experience has also prompted the decision to locate the PFBR at Kalpakkam.

Consistent with the approach adopted by the Department of Atomic Energy, which under lines the need to preserve the original state of the environment around nuclear power stations, an Environmental Survey Laboratory (ESL) was set up at Kalpakkam and it started functioning in 1974. This has made it possible to build up a wealth of base line data on radiation levels arising from naturally present radiation materials. The studies have indicated the presence of thorium bearing mineral in the beach sand of the region. The department has taken particular effort to limit any additional exposure attributable to the operation of the nuclear facilities at Kalpakkam to no more than a few per cent of the generally prevalent natural levels. The success of these efforts has been evident from the measurements made during the survey of the environment and site carried out by the ESL. The total absence of dust and smoke around a nuclear power station allows unhindered growth of trees as any visitor to Kalpakkam site can see. About 50,000 saplings have been planted in the uninhabited Exclusion Zone around the installations, over the years.

The investments of several hundred crores of rupees in the establishment of the various installations at Kalpakkam site has also provided job opportunities for the local population in construction, fabrication and service activities. The Kalpakkam Centre has contributed to a rapid transformation of the area around it through introduction of transport and communication services. At Kalpakkam township, there is a bus depot of

Thanthai Periyar Transport Corporation,two branches of nationalised banks and a post and telegraph office, besides a telephone exchange placing Kalpakkam on the STD map of the country.

Indira Gandhi Centre for Atomic Research

Indira Gandhi Centre for Atomic Research (IGCAR) formerly known as Reactor Research Centre (RRC) was set up in 1971 at Kalpakkam in the Chengalpattu-MGR District to carry out R&D necessary for creating a sound base in the country for Fast Breeder Technology. Development of this Technology is of crucial importance for meeting the long term needs of the country through full utilisation of natural uranium and vast resources of thorium with the help of Fast Breeder Reactor. A major facility at this centre, Fast Breeder Test Reactor, (FBTR) attained criticality in October 1985. The reactor uses indigenously developed mixed carbide fuel. Major components of this reactor were made in the country. Experience gained has become the basis for the design of the proposed prototype Fast Breeder Reactor of 5000 MWC capacity. Detailed design is progressing and development of manufacturing technology has already started[29].

The FBTR the centre has also the following laboratories: i) Engineering Development Laboratories; ii) Radiometallurgy Laboratory; iii) Metallurgy and Materials Development Laboratories; iv) Radiochemistry Laboratories; v) Fuel Reprocessing Development Laboratories; vi) Safety Research Laboratory; and vii) Instrumentation Laboratories. Engineering Development Laboratories have been functioning and work is being carried out to develop the sodium technology essential for Fast Breeder Reactors Radiometallurgy Laboratory has been set up to carry out Post-Irradiation studies on the fuel. Metallurgy and Materials Development Laboratories are undertaking studies on materials needed for Fast Breeder Programme and generating data necessary for the design. The Radio-chemistry laboratories of this centre is undertaking the necessary studies to formulate the flow sheets for fuel reprocessing and waste management. The Fuel Reprocessing and Development Laboratories are undertaking the engineering of the reprocessing systems and setting up the plant for reprocessing spent fuel from Fast Breeder Test Reactor. Safety Research Laboratory of the centre carries out Research and Development necessary for rediological safety. Instrumentation laboratories develop the special instruments needed for the centre. The centre has also the necessary support facilities, *viz.*, Computer Centre, Engineering Services Group, Library and Documentation Services and Civil Engineering Group to enable total implementation of the programmes of this centre. This centre was named after Indira Gandhi by the then Prime Minister (late) Shri Rajiv Gandhi on 16 Dec1985[30].

North Madras Thermal Power Project (NMTPP)

A glance at the figures for the last five years reveals that there is a growing need for electricity caused by peak demand and energy consumption in Madras city. In 1989-90, the demand was 673 MW, which went up by about 50 MW in 1990-91. Correspondingly, the consumption, which was 3439 Mu, rose to 3728 Mu. In 1992-93, the demand and consumption were 783 MW and 4006 MU respectively. They shot up to 829 MW and 4130 MU in 1992-93 and stood at 855 Mu and 4362 Mu in 1993-94. It is in this scenario that the need for early commissioning of the NMTPP assumes significance. One of the main objectives of having this power station is to provide a fillup to industrial activity in the Manali-Panjetti-Gummidipoondi belt, so that, it would help stabilise power position in the state.

Out of 2491 acres earmarked for the project, an area of 1107 acres for plant, 1137 acres for ash dumping, including provision for ash slurry pipelines, and 247 acres for construction of quarters for officers and other staff have been allocated. Further, an area of 1063 acres has been earmarked for construction of a satellite port by the Madras Port Trust for receiving sea-borne coal from the Paradeep Port to the NMTPP and the Ennore Thermal Power Station (ETPS). The Chimney at NMTPP towers to a height of 275 metres. The height of the Chimney is only one of the many special features of the power station. The first unit of the power station which was inaugurated on 15 February 1995 is designed to generate about 4.5 Million Units (MU) a day.

The Asian Development Bank(ADB) assisted project, costing Rs.1792 crores will have three units of 210 MW each in the first stage, totalling 630 MW. In the second stage, there will be one unit of 500 MW and in the third, two units of 500 MW each. A railway siding has been provided, taking off from the Madras-Howrah line at Athipattu. Keeping in view the difficulty in transporting coal entirely through railway, the Satellite Port has been proposed. Each unit requires 3000 tonnes of coal daily. The source of coal is Kalinga Mines in Talcher Coal Field in Orissa. The coal handling system envisages two streams of conveying (one functioning and another stand-by) for three units in the first stage. Each conveying stream is of 2000 tonnes per hour capacity. The storage yard can hold four lakh tonnes of coal, required for 50 days. A boiler and a turbine generator for the first Unit of the power station were supplied by the Bharat Heavy Electricals Limited (BHEL). There will be six ash disposal pumps for each unit, each of 950 cubic metres per hour capacity.

The other special feature of the NMTPP include a state-of-the-art user-friendly computer control system and setting up of a reverse osmosis plant to reduce total dissolved solids (TDS) in raw water. One member of each of the nearly 900 families 'displaced' due to the project, has been

provided with employment in the Electricity Board. The Tamil Nadu Electricity Board has constructed a community hall and a place of worship for local residents of Ennore.

Industries and manufacture

The development of Industries has been assigned a high order of priority in the second five year plan[31]. Industries may be broadly classified as i) Heavy industries; large and medium scale industries producing capital goods; ii) Light or small scale industries producing capital goods with the aid of small machinery and power; iii) Village Industries that are traditional in character, producing such goods that are consumable within the villages and not involving the use of any complicated machinery; and, iv) Handicrafts which involve high degree of artistic skill; small scale and large scale industries are complementary to each other. In the following pages, descriptive accounts of some of the large and medium scale industries, small scale industries, Khadi and Village industries, Handloom industry, Handicrafts and industrial estates are dealt with in detail.

Madras Refineries Limited

Madras Refineries Limited, the ninth in a chain of 12 Indian refineries and thé third in the south was established as a joint venture among the Government of India, the National Iranian Oil Company and American Oil Company (AMOCO) of USA in 1965 with initial investment of Rs.45 crore. It was commissioned in1969 with an initial design through out of 2.5 million tonnes per annum of imported lube bearing crude. Currently, the refinery's capacity is 5.6 million tonnes of crude per annum which is about 12 per cent of India's total refining capacity. It has not only been conquering new frontiers of excellence in petroleum refining but has also spearheaded the growth of the petro-chemical industry in Tamil Nadu.

The company's paid-up capital is Rs.114.13 crores. Of this, Government of India held 84.62 per cent while National Iranian Oil Company (NIOC) holds 15.38 per cent. American Oil Company, however, withdrew its share capital. Recently, Government of India had disinvested 20 per cent of its holding amounting to Rs.19.31 crores in favour of mutual funds / financial institutions/banks. With this, Government of India holding will be 67.71 per cent that of NIOC 15.38 per cent and that of mutual funds/financial institutions/ banks 16.91 per cent.[32]

Capital Investment of MRL from 1981-82 to 1991-92

(Capital employed = Net Fixed Assets + Net Working Capital) excluding Capital Working Progress.

Year	*Amount* (Rs.in lakh)
1981-82	256.31
1982-83	1424.58
1983-84	7180.85
1984-85	22973.60
1985-86	(-) 178.27
1986-87	(-) 3088.77
1987-88	(-) 1241.54
1988-89	2652.97
1989-90	1198.46
1990-91	1289.44
1991-92	10488.05

The quantity of products manufactured for the years 1989-90 and 1990-91 is given below:

Product	*1989-90*	*1990-91*	*Percentage of increase*
LPG (including Propy PBFS & MEKFS)	1,28,500	1,47,900	15.1
Petrol	2,68,500	3,04,000	13.2
Superior Kerosene (including Lab Feed stock)	8,14,900	8,49,500	4.2
Diesel	15,67,700	16,91,000	7.9
Wax	11,000	15,000	36.4
Lube	1,61,500	1,66,700	3.2

Production during 1991-1992

Items	*OES Target = MoU Very Good Target*	*MoU Excellent*	*Actual Achieve-ment*
Crude Throughput -('oooT)	5410.0	5500.0	5524.0
LPG (Incl.;Propylene and Petro-Chemical feedstocks) ('oooT)	135.0	140.0	133.6
Lube production ('oooT)	133.0	138.0	140.7
Paraffin Wax ('oooT)	13.5	14.0	14.2
Bitumen('oooT)	200.0	205.0	214.6
Fuel and Loss (percentage of crude throughput)	7.7	7.5	7.3

Employment

During the year 1969, there were 415 persons employed in the plant; the employment strength increased to 522 in 1976 and it was 1000 in 1985. Details as to the employment position in 1990 was 1357. The employment position from 1969 to 1991 are shown in *Appendix-3.* Madras Refineries Employees Union and Madras Refineries Officers Association are the two associations in the industry.

Paraffin Wax Project of Madras Refineries Limited

The refinery's paraffin wax plant was commissioned in the year 1983. The plant is designed to produce 20,000 tonnes a year. Assam oil is the only other refinery, producing paraffin wax in the country. The grades of paraffin wax (classified by melting points) are produced by the Rs.18 crore Madras Refineries Limited plant. The melting points are 128°F/144°F. and 165°F. The approximate break-up of these grades is 6600 tonnes, 9200 tonnes and 4200 tonnes respectively, the last two being inter-changeable. The 128°F melting point is exclusively used in the manufacture of matches. The production is in both drums and bulk. Paraffin wax is used in the manufacture of candles, water proof tarpaulins, coating of paper wrappers for biscuits, bread, etc., and with chlorination for PVC cables. The feedstock for making paraffin wax is slack wax obtained during the de-waxing operation, while producing lubricating oil base stocks. The slack wax available in the Manali Refinery is converted into furnace oil and diesel.

The manufacturing process at the plant is based on de-oiling of the slack wax, using methyl isobutyl ketone (MIBK) as solvent which is indigenously available. After mixing the slack with/solvent and chilling the paraffin wax which crystallises, is filtered and clay treated. The solvent is recovered for reuse. The oil content which as much as 30 to 40 per cent is slack wax, is reduced to 0.25 per cent for good grades and to about 3 to 4 per cent for the match grade of paraffin wax. The technology for this process has been secured from Union Oil Company of California, USA and the process design is by Foster Wheeler Energy Corporation, also of USA. The expansion project has the capacity of the refinery to 5.8 million tonnes a year. In addition, a secondary processing facility has been installed to increase the production of light and middle distillates-LPG, gasolene and high speed diesel. The refinery facilities have been designed to handle a wider range of crudes with the emphasis on middle distillates. The FCC technology was acquired from universal oil products of the U.S., which supplied the process package on which Engineers India Ltd. carried out detailed engineering.

Sewage Treatment Plant at Madras Refineries Limited

A tertiary plant for treating secondary treated sewage water for industrial purposes has been set up at Madras Refineries Limited at a cost of Rs.20 crores. The tertiary plant is commissioned at the Madras Refineries Limited, Manali, on 31 August 1991. The plant has a capacity to treat 2.5 million gallons of secondary treated sewage a day. Designed by Hindustan Dorr-Oliver Limited, a well known company in the field of water and waste water engineering, the plant incorporates the state-of-art technology for tertiary treatment of sewage and reverse osmosis. It has also incorporated in it the French Dupont's desalination technology. The plant brings down the bio-oxygen demand in secondary treated water. It recovers about 9500 cubic metre of water per day and is reused in Madras Refineries Limited cooling water system[33]. For industries in Madras which face water crisis on and off, this unconventional method of extracting water from sewage brings the much required relief.

Sewage Water Treatment Plant

A Sewage Water Treatment Plant with a capacity of 2.5 MGD has been commissioned at a cost of about Rs.25.40 crores. This project has been executed as a part of water conservation measures due to acute water shortage faced by Madras city and also to meet the additional water demands required for future projects.

Modernisation of Effluent Treatment Plant

As part of pollution control measures, the Effluent Treatment Plants were modernised to treat the effluents to Minimum National Standards (MINAS) at a cost of about Rs.18.75 crores and the project has been completed.

Production of Foodgrade Hexane

A Plant for production of 25,000 TPA of Food grade Hexane has been completed and commissioned at a cost of about Rs.10 crores. The production of Hexane by MRL would make the country self-sufficient in Hexane.

Modernisation of Instrumentation in Old Refinery

The refinery instrumentation control has been modernised at a cost of Rs.26.13 crores. This includes On-line Tank Level Information System, the first of its kind in India.

Lube Expansion Project

The project to expand the lube production capacity from 1,40,000 TPA to 2,70,000 TPA including 50,000 TPA of Bright Stock is under implementation at a cost of about Rs.163.75 crores. This project involves construction of three new plants and revamping of two existing plants with necessary utilities and storage facilities. The units are scheduled for commissioning by May 1993. The foreign exchange saving on account of this increased production will be around Rs.100 crores.

Optimisation of Refining Capacity

This project for increasing the refining capacity of Crude Unit in Refinery II at Manali from the existing level of 2.8 MTPA to 3.7 MTPA at a cost of about Rs.38 crores has been completed by December 1992.

Augmentation of Power Generation

Madras Refineries Ltd. is putting up a power plant at a cost of about Rs.88.00 crore with a view to augment the power and steam supplies for meeting the additional requirements of various new projects under implementation. Orders have been placed for two 20 MW Steam Turbo Generators and two 130 Tonnes per hour Boilers. The project is scheduled for completion by May 1994.

Expansion of Propylene Capacity

A project for increasing the production of propylene from 17,000 TPA to 34,000 TPA at a cost of about Rs.28.30 crore has been implemented during 1992-93.

Joint Sector Projects

Indian Additives Limited

A company by the name of Indian Additives Ltd. (IAL) has been formed by MRL as a Joint Venture with M/s. Chevron Chemical Co. USA. IAL manufactures a wide range of superior kinds of additives required by automobile industry, Railways and Marine Engineering. The first phase costing Rs.28 crores of the total investment plan of Rs.48 crore has been

completed and has become operational by June 1992 and the remaining phase will be operative by March 1993.

Aromatics Project

A Joint Venture Company, - National Aromatics and Petro-Chemicals Corporation Limited has been established by MRL with SPIC as co-promoter for the production of 2,00,000 TPA of PTA, 30,000 TPA* of O-Xylene and 23,00 TPA of Benzene at an estimated cost of Rs.1725.00 crore. The Government of India have given their approval for the project.

Environment Protection and Occupational Health Service (OHS)

Madras Refineries Limited, has been playing a leading role in the protection of environment both at its plant location and in surrounding areas. During the 1990-1992, the company has planted over 1,20,000 tree saplings and has been ensuring its maintenance with a record success of about 90 per cent. In addition, MRL has developed gardens and traffic islands.

The petrochemical industry operates in the midst of potential health hazards. Occupational exposure to gases, complex mixture of hydrocarbons, other chemicals, heat stress, high noise level are encountered in the industry. This necessitates a constant vigil through an occupational health programme aimed at protection of human health from the adverse consequences of exposures of these substances in the environment.

With this need in mind, MRL has established during the year 1992, a Centre for Occupational Health Services. This centre is well equipped with latest equipments including precision apparatuses and testers to make a quick and high quality scientific work possible and is manned by highly qualified team of doctors and scientists. The centre carries out occupational hygiene monitoring of the work environment and periodic health examination of employees to ensure sound health of the employees. The centre provides professional and technical assistance to other neighbouring industries in Manali.

Social welfare activities

MRL has undertaken the following social welfare activities for the benefit of the community during the year 1991-92. About 55,000 children from the schools in Puzhal Panchayat Union and areas nearer to MRL have been screened by doctors and given necessary treatment for their ailments. Special cases have been referred to the government hospitals and also the school headmasters and the parents are informed of the health problems of their children well in advance. About 5,000 villagers have been screened and given necessary medical treatment. MRL runs a 'creche' for about fifty children, a physiotherapy unit, a medical centre and a library for the benefit

* TPA - Tonnes Per Annum

of the villagers in and around Manali. It has renovated during the year 20 noon meal centres in Chengalpattu-MGR district and plans to renovate 80 more centres in this district.

Polybutenes Plant, Manali

M/s. Kothari Sugars and Chemicals Limited, a private company, has set up a Polybutenes plant at Manali for manufacturing petrochemicals with a capacity of 5000 tonnes per annum. These petrochemicals find use in jelly filled compounds for telecommunication and power cables. The plant manufactures polybutenes and it is supported by iso-butylene, a rich feedstock from the Madras Refinery.

Methyl ethyl ketone Unit, Manali

M/s. Cetex Petrochemicals Ltd. has established Methyl ethyl ketone Unit at Manali with a capacity of 4000 tonnes per annum. Methyl ethyl ketone (MEK) is a versatile solvent with applications in lube oil, magnetic tape, printing ink, pharmaceuticals and other industries. The unit has been based on butene-2 rich feedstock from M.R.L.

UB Petro-products Plant, Manali

The Plant is a joint venture of UB Ltd., Tamil Nadu Industrial Development Corporation (TIDCO) and Montedipe of Italy. It is established at a cost of Rs.85 crore at Manali. It manufactures propylene Oxide-propylene glycol and polyols. Press Industrial of Switzerland has provided the knowhow. The Propylene Oxide plant is capable of producing 12,000 tonnes of propylene oxide/glycol per annum. The Polyols plant of UB has a capacity of 12,000 tonnes a year[34].

Madras Fertilizers Limited

Madras Fertilizers Limited, situated at Manali, is a public sector undertaking with the Government of India holding 67.55 per cent of the equity and the balance held by a foreign company, the National Iranian Oil Company (NIOC). The company was incorporated on 8 December, 1966 and commercial production commenced from November 1971. For more than two decades, MFL has been manufacturing and marketing NPK Complex Fertilizers and Urea mainly in the Southern States. The MFL fertilizer complex comprises of a 750 TPD Ammonia Plant, 885 TPD Urea Plant and a NPK Plant of about 1850 TPD capacity for different NPK formulations. The naphtha based Ammonia Plant and the Urea Plant were designed, engineered and constructed by Chemical Construction Corporation (Chemico) of USA, while the NPK Plants, designed to use imported phosphoric acid were built by Hindustan Dorr Oliver[35].

Manufacturing Process

Ammonia Plant

Ammonia Plant is of Chemico design using Naphtha Steam Reformation route. Naphtha is the main feed stock, which is first desulphurized and cracked with steam to obtain hydrogen, Methane and Oxide compounds at 770 deg and 30 KSC pressure on Nickel Catalyst. Atmospheric air is used as source of N2. Process gas is purified in stages using Catalysts to obtain 1:3 ratio of Nitrogen and Hydrogen. Pure synthesis gas is compressed to 200 atmospheres and converted to Ammonia using Iron Catalyst in Ammonia Converter. To make urea, ammonia and carbon dioxide (one of the byproducts in making ammonia) are mixed in a stainless steel lined reactor at 200 atmospheres pressure. After a number of decomposition and recovery steps to ensure maximum product yield from the ammonia liquid, urea is concentrated to a solid in the "prill tower". The hot liquid is sprayed down the inside of a 150 foot high cylindrical concrete tower, counter current to a stream of air. The urea solidifies into small white "prills" in tear drop shape. Some urea is bagged directly and shipped as high grade nitrogen fertilizer, and some is used in the NPK Plant.

The final product, NPK is made by reacting ammonia and phosphoric acid to form ammonium phosphate solution. This solution is then granulated with urea and potash, to make balanced grades of NPK. The granules are dried, screened, coated and bagged for shipping of the farmer. The major raw materials required for the Plant are atmospheric nitrogen, naphtha, phosphoric acid and potash. Naphtha comes from Madras Refineries Ltd. while phosphoric acid and potash are imported. Madras Fertilizers Limited has commissioned a Biofertilizer Plant in March 1991 of 100 T Capacity. Considering its very low cost compared to chemical nitrogen, biofertilizers will go a long way in serving the farming community.

Madras Fertilizers Limited markets its Complex and Urea fertilizers under the brand name "VIJAY". During the last 20 years, VIJAY fertilizers have been well accepted by the farming community in the Southern States VIJAY 17-17-17, the major product of the company, is widely accepted by farmers and is suitable for a variety of crops. Its products are marketed in the four Southern States of Tamil Nadu, Karnataka, Andhra Pradesh and Kerala and the Union Territory of Pondicherry, Madras Fertilizers Limited has over 5,000 dealers spread out in its marketing territory to ensure that the product reaches the farmers in all the nooks and corners. Madras Fertilizers Limited also markets its products through institutional marketers like State Marketing Federations, State Agro Industries Corporations, who in turn, sell the products through their retail network of Co-operative Societies, Agro-Kendras and sales depots.

Apart from making the fertilizers available to farmers, Madras Fertilizers Limited also educates them on the balanced usage of fertilizers for increased yield. Madras Fertilizers Limited undertakes comprehensive Rural Development Programmes (IRDPs), long term Agricultural Development Programmes, Farmer Seminars, Audio Visual Van Programmes, Intensive Consumer Contact Programmes and several other activities to promote scientific agriculture.

Madras Fertilizers Limited also helps the farming community in improving their standard of living by arranging supplemental occupations like silkworm rearing, poultry farming, basket weaving, etc. This industry also undertakes many other social welfare activities such as arranging human health camps, animal health camps, protected drinking water supply, surface water tanks for cattle, gobar gas plants, smokeless chuhlas, etc. In the last 20 years, Madras Fertilizers Limited has sold 1.28 crore MT of fertilizers. On an average, Madras Fertilizers Limited, contributes for an increased foodgrain production of about 30 lakh MT every year. The Madras Fertilizers Limited soil testing laboratory, tests the soils and sends its recommendation for fertilizer application, after considering the soil composition and crops planned.

Avadi Tank Project

Self-reliance and self-sufficiency in defence industry is the sheet of anchor of the government's policy. The establishment of the heavy vehicles factory formed part of the general expansion of defence production. In realisation of this programme, work was started in December 1961 when the foundation stone was laid at Avadi for the establishment of the factory. The heavy vehicles factory was set up under the Ministry of Defence in collaboration with the United Kingdom firm Messrs. Vickers Armstrongs (Engineers), Ltd., at an estimated cost of Rs.16 crore. The factory produces all types of armoured fighting, tracked vehicles and other items of heavy engineering equipment required by the Defence Services. It manufactures all the major parts of the armoured tank including the engine, gear-box and the suspension[36].

Medium tanks were the major items of production of the factory at the beginning. Medium tanks, as distinct from light tanks which weigh 13 to 20 tonnes and heavy tanks above 45 tonnes, range in weight from 20 to 45 tonnes. The special steel required for the manufacture of the tank is produced at Rourkela and supplied. Each medium tank costs about Rs.10 lakhs. To start with, the factory was making the use of indigenous materials up to 30 per cent and the percentage increased considerably in the long run. Training and instruction were given by foreign experts at the factory in the various stages of production of the tank. The total room of the factory commenced production in November 1964. There is an Artisan School attached to the factory. The Artisan School was started in November 1964

as a nucleus to train skilled workmen. Trainees are recruited on All-India basis, after detailed psychological and aptitude tests. The factory and residential colony are located in a 1400 acres site, of which Tamil Nadu Government gave 770 acres free of cost. The state government have also made arrangements for permanent water and power supply to the factory. The factory has a floor area of nearly 12.5 acres. The factory is one of the biggest industrial establishments in the country with an initial employment opportunity for 3000 workers. This tank project opens up opportunities for a number of ancillary and feeder industries and gives a fresh fillup to industrial activity in the area.

Government Mechanised Brick Making Industry

Thirumazhisai

With a view to meeting a substantial part of the requirements of the building programme of government departments in respect of bricks, the Government of Tamil Nadu in Industries Department have set up a fully mechanised brick plant in the year 1968 at Thirumazhisai[37] about 25.6 km. from Madras city. The production capacity of the plant is 66,000 bricks per day[38].

Clay is collected by multi-bucket excavators and transported to the preparation shed by tipping trollies pulled by diesel locomotives. Box feeders at this stage enable proper proportioning of raw materials and steady feeding of salt conveyor. Two pairs of heavy high speed rollers ensure through mixing and grinding of clay. A notable feature of the press is that it has facility to remove air from the clay mass as it enters the extrusion chamber. The de-airing facilities easy production comparatively complicated items like a partition blocks, hollow blocks, perforated bricks, etc. The extruded bricks are cut by automatic cutters, loaded in finger cars and taken to artificial dryers. Six-four numbers of artificial chamber dryers each with a capacity of about 3600 bricks and working on the principle of humidity drying are designed to ensure removal of moisture from the bricks from about 22 per cent to five per cent. Rapid drying of bricks especially in low humidity conditions cause uneven shrinkage, resulting in warping cracking and other faults. Earlier stages of drying are, therefore, done in highly humid atmosphere waste heat from cooling zones boosted with additional fire month burners is used for drying the bricks. The artificial dryers have been designed to dry bricks completely in about 72 hours.

The dried bricks are fired in latest type of Hoffman Kiln with furnace oil, using impulse burners which ensure efficient use of the fuel. The plant at Thirumazhisai has two production lines each designed to give an output of at least 33,000 numbers of solid bricks of size nine inches by four and a half inches by three inches in a shift of eight hours. Two lines make it possible for the unit to undertake manufacture of two different types of items

simultaneously. When compared to ordinary stock bricks, machine made bricks from the Thirumazhisai plant have better finish and texture. They are more accurate in size and shape. They have less absorption and far higher crushing strength. The Indian Standard Specification prescribes a minimum crushing strength of 35 kg. per sq.cm., for common building bricks. The specification also grades bricks of crushing strength of 70 kg. per sq.cm. and 140 kg. per sq.cm. as grade 'A' and Grade 'AA' respectively. The crushing strength of bricks manufactured at Thirumazhisai exceeds 193 kg. per sq.cm. Similarly, against 20 per cent, 22 per cent and 25 per cent water absorption provided for Class-I, Class-II and Class-III bricks, the Thirumazhisai bricks have 10.6 per cent only. Buildings constructed with these bricks have 10.6 per cent only. Buildings constructed with these bricks can afford to leave the outer surface without plastering. This government brick plant was established at a cost of Rs.75 lakhs with the production capacity of 66,000 bricks per day[39].

The Kancheepuram Kamakshiamman Co-operative Spinning Mills

The Kancheepuram Kamakshiamman Co-operative Spinning Mills Ltd., was registered on 4 July, 1961 with the object of rural industrialisation and supply of good quality yarn at reasonable price to the weavers of handloom industry. The mill is located at Vaiyavur village 3 km. away from Kancheepuram towns in an area of 42.70 acres. The mill was set up under co-operative sector with an installed capacity of 12,000 spindles and with an authorised capital of Rs.45 lakh. The spinning mill is the eighth of the nine new mills established simultaneously as part of the Co-operative Spinning Mills Project in the Third Five Year Plan, went 'on a stream' and started trial production on 25 December 1965. The mill was formally inaugurated on 4, February 1966 with 13680 spindels. In August 1978, the total capacity of the mill increased to 25080 spindles[40].

Capital Investment

The production commenced in the mills on 30 June 1966. The total share capital as on that date was Rs.20.26 lakhs[41]. The quantum of share capital by different categories of members as on 30 June 1966 and 30 June 1991 is tabled below :

	Share Capital as on 30 June 1991 (Rs. in lakhs)	Percentage
1. Weaver's Co-operative Societies - 'A' Class	6.38	6.55
2. Other Co-operative Societies - 'B' Class	1.41	1.45
3. Individuals - 'C' Class	0.94	0.96
4. State Government - 'D' Class	88.73	91.04
Total	97.46	100.00

Production Capacity and Pattern of Production

The mill has a licensed capacity of 25152 spindles and its installed capacity is 25080 spindles. The average monthly production of the mill is 1.50 lakh of kg. The mill is engaged in the production of cotton yarn in the form of hank and cones. The hank yarn is manufactured in NE. 30S, 40S, 60S and 80S carded and combed. The cotton yarn varieties are N.E. 30S, 34S, 40S, 60S and 80S. The major output is purchased by the Co-optex and surplus is sold in the open market. The production and sales particulars of the mill from 1965-66 to 1990-91 are tabled in *Appendix-4.*

Sources of raw material supply

The procurement of required cotton (raw material) for the mills is made through centralised cotton purchase cell of the Tamil Nadu Textile Corporation, Coimbatore. The purchases are made from the Maharashtra State Cooperative Cotton Growers Marketing Federation, Karnataka Co-operative Cotton Federation, Gujarat Co-operative Cotton Federation and Punjab Cooperative Cotton Federation. Further, purchases are also made from local cooperative marketing societies and from private registered cotton traders. The mill is under the administrative control of the Director of Handlooms and Textiles[42].

Other particulars of the Mills

The mill has availed of term loan facilities from the Industrial Development Bank of India, Tamil Nadu Industrial Investment Corporation and from the Tamil Nadu State Apex Co-operative Bank Limited, Madras. The mill avails cash credit facilities for working capital purpose from the Kancheepuram Central Co-operative Bank Limited, Kancheepuram with the State Government guarantee. About 136 ceylon repatriates, have been provided with employment during the year 1976-77. From the year 1985, 100 Adi Dravidars have been employed under Special Component Plan from the Special Central Assistance Fund available with Tamil Nadu Adi Dravidar Housing and Development Corporation. 229 workers belong to other categories and thus bringing the total number of workers on roll to 465 during 1991. The mill earned a net profit of Rs.41.52 lakh in the year 1990-91 and gross profit of Rs.100.04 lakh. The mill was awarded second prize for energy conservation in all India level of co-operative spinning mills during 1990-91[43].

The Madurantakam Co-operative Sugar Mills Limited, Padalam

The Madurantakam Co-operative Sugar Mills was registered as Co-operative Society on 4 December 1955 with an authorised share capital of Rs.40 lakh and started functioning on the same date. The taluks of Madurantakam, Cheyyur, Chengalpattu and Uthiramerur of Chengalpattu-MGR district, entire Thenneri, Walajabad, Magaral and Kancheepuram firkas,

20 villages of Sriukaveripakkam firka and 18 villages of Chittiambakkam firka in Kancheepuram Taluk of the district, six villages of Padappai firka of Sriperumbudur Taluk, eight villages of Tambaram firka, four villages of Alandur firka, four villages of Pallikaranai firka and two villages of Maduravayal firka of Saidapet taluk of Chengalpattu-MGR district. Entire Olakkur firka and eight villages of Vadasiruvalur firka of Tindivanam taluk in South Arcot district constituted the command area of the mills.

Membership and share capital

On the date of registration, the mills had 642 members on its roll with a paid up share capital of Rs.5.12 lakhs. The membership had gradually increased and as on 30 June '91, there are 15,001 members with a paid up share capital of Rs.206.66 lakhs which includes the share capital of Rs.36.11 lakh of Government of Tamil Nadu. The authorised share capital of the mills at present is Rs.300 lakh. Details of share holders, share capital by growers as well as government share from 1980-81 to 1990-91 are shown in *Appendix-5*[44].

Crushing Programme

The mills started its first crushing in 1960-61 season on 18 March '61 and completed 31 crushing seasons on 21 June '91. During 1990-91 crushing season, 4,26,693 tonnes of cane was crushed which is the highest crushing in the history of the mills.

Finance and term loan

Initially, the mills borrowed Rs.63 lakhs from Industrial Finance Corporation of India and Rs.25 lakhs from Tamil Nadu State Co-operative Bank for block capital requirements and the entire loan amount was repaid on due dates as per the schedule. Besides, the mills redeemed the cumulative preference shares Rs.10 lakh invested in the mills by Chengalpattu District Co-operative Supply and Marketing Society and the share capital of Rs.5 lakhs out of Rs.41.11 lakhs invested by the Government of Tamil Nadu. The mills borrowed a term loan of Rs.50 lakhs from Tamil Nadu State Cooperative Bank to meet the expenses for balancing the crushing capacity to 2000 tonnes per day. This amount was re-paid fully in five annual instalments together with interest at the rate of 11.5 per cent per annum commencing from the year 1984-85.

Ways and Means advances from Government of Tamil Nadu

The Government of Tamil Nadu have sanctioned Ways and Means advance to the mill, whenever the Mills experienced any difficulty in managing the affairs of the business either to settle the cane payment to the cane growers or to meet the working capital requirements.

The mill availed Rs.25.00 lakhs as advance in 1978, and Rs.48.33 lakhs in April 1979. During December 1979, further a sum of Rs.23.00 lakhs

was advanced to the mill. The mill availed a sum of Rs.8.80 lakh and Rs.90.00 lakh during 1981 and 1982 respectively. The entire amount was repaid to the government with interest.

Working Capital requirements are met by Kancheepuram Central Co-operative Bank Limited. The mills availed a housing loan of Rs.3.95 lakhs from Government of Tamil Nadu for construction of 104 double storeyed tenements under "Subsidised Industrial Housing Scheme" with repayment period of 25 annual instalments. The loan is being repaid according to the repayment schedule. So far, a sum of Rs.1.15 lakhs with interest thereon has been repaid.

Term Loan from Tamil Nadu State Co-operative Bank for construction of additional sugar godown under National Co-operative Development Corporation (N.C.D.C.) :

World Bank Storage Project

The available storage capacity of sugar was only two lakh quintals against the requirement of 3 lakh quintals of sugar. The construction of sugar godown has been completed. The National Co-operative Development Corporation sanctioned a sum of Rs.22,225 lakhs through Tamil Nadu State Cooperative Bank Limited, Madras, as their share as term loan for "Construction of Godowns under National Cooperative Development Corporation-III World Bank Storage Project." The source of finance is as follows :

Source of finance	*Percentage of the cost of scheme*	*Amount of the scheme* (Rs in lakhs)
Loan from N.C.D.C. through Tamil Nadu State Coop. Bank	50	22.2250
Share capital contribution by Government of Tamil Nadu with N.C.D.C.'s assistance	25	11.1125
Own funds of Co-operative concerned	25	11.1125
	100	44.4500

Expansion

The original installed capacity of the mills was 800/1000 tonnes of cane per day (T.C.D.). But, all the units were not capable of crushing to the full installed capacity of 1000 T.C.D. On the suggestions of the National Sugar Institute, Kanpur, some units were added during 1969 to maintain the average

crush of 1000 tonnes of cane per day. Encouraged by better working results and flourishing sugar trade from the year 1971-72 onwards coupled with the enthusiasm evinced by cane growing members to bring more area under cane cultivation and also taking into consideration of the incentive announced by the Government of India for expanded factories, the crushing capacity of the mills was expended to 1750 TCD at a cost of Rs.300 lakh. The expansion works were commenced in 1975-76 without detrimental to the normal crushing and completed during 1976-77. The first crushing at the expanded rate of 1750 TCD was commissioned in the year 1977-78.

Even though the mills had adequate capacity to crush 2000 TCD, due to bottlenecks in the Boiling Section, the capacity was restrcited to 1750 TCD. However, as the mill had no problem in getting sufficient quantity of cane, the State Level Advisory Committee advised the mills to balance the crushing capacity to 2000 TCD by adding certain units in the Boiling House. The balancing work was completed during 1983-84 (off-season) at a cost of Rs.97.5 lakh. The mill is able to tap a large quantity of cane on account of enthusiasm shown by the growers for the past three-four years. The entire cane had to be crushed by extending the period of crushing besides diverting the excess available cane to other mills. In view of economic crushing and also as per the revised policy of Government of India for licensing the minimum crushing capacity, a Letter of Intent has been issued to the Mills for expanding the crushing capacity from 1750 TCD to 2500 TCD. The implementation of the expansion programme at a cost of Rs.19 crore is in progress.

Incentive Scheme

Prior to the period of expansion to 1750 TCD, the Government of India in order to achieve the targetted production and to make the new and expanded units as viable had announced a scheme of incentive in December 1975. According to the scheme, the mills were allowed higher free sale quota and concession in Central Excise Duty on higher free sale quota. A sum of Rs.93.45 lakhs was realised under this scheme from the year 1980-81 to 1984-85.

Cane Supply and Development

The area of operation of the mills was new to cane cultivation at the time of establishment. Several cane development measures were taken up by the mills like extending early planting seed subsidy, transport subsidy for the cane drawn from the areas beyond 30 km., plant protection measures, etc., to encourage the cane grower to take up the cane cultivation. Consequently, the cane area was increased from 2000/3000 acres in the early sixties to 16000/18000 acres in nineties. For 100 per cent capacity utilisation, the mill requires about 3.45 lakh tonnes of cane which is easily available. The working results of cane availability, sugar bagged, etc., from 1988-89 to 1990-91 are tabulated below :

S.no.	Particualrs	1988-89	1989-90	1990-91
1.	Cane crushed (MT)	3,61,959	3,29,830	4,26,693
2.	Cane diverted to other Mills (MT)	76,767	----	40,880
3.	Sugar bagged (Qtls.)	3,50,460	3,02,200	3,78,445
4.	Recovery per cent	9.68	9.17	8.86

An area of 25.65 acres is in possession of the mills to conduct varietal and other agronomical trials to find out its suitability to this tract. Under three tier nursery programme Primary nursery is raised in the Farm itself and after treating the seeds in A.S.T. Unit, seeds are supplied to the cane growing members for secondary and commercial nursery planting. The details such as licensed capacity and actual production of the mills from 1960-61 to 1990-91 and shown in *Appendix-6.*

Loan under Sugarcane Development Fund

The Government of India have sanctioned a sum of Rs.256.26 lakh (including the contribution of the mills to the tune of 10 per cent disbursable over a period of three years on nominal interest for raising of nurseries (Rs. 29.89 lakh), plant protection measures (Rs. 23.77 lakh), incentive for cane growers for improved varieties (Rs. 123.72 lakh), irrigation scheme (Rs. 68.36 lakh), ratoon management (Rs. 5.52 lakh), installation of Computer (Rs. 5.00 lakh)

Working results

In earlier stages, shortage of raw materials, extension of crushing during the lower recovery periods, uneconomical sugar sales realisation etc., resulted in loss and thereby there was an accumulated loss of Rs.20.64 lakhs up to 1970-71. This was wiped out later and the mills was working on profit from 1971-72 onwards. Again, on account of expansion resulting in increased on overheads among other things, the mills was working on accumulated loss of Rs.90.65 lakh as on 30 September 1985 which was completely wiped out and the mills is now working in profit from the year 1985-86 onwards. The details of profit earned (loss sustained) by the mill from 1985-86 to 1989-90 are as follows :

Year	Profit (Rs. in lakhs)
1980-81	(+) 57.07
1981-82	(+) 0.39
1982-83	(-) 10.03
1983-84	(+) 78.17
1984-85	(+) 65.43
1985-86	(+) 109.47
1986-87	(+) 140.06
1987-89 (18 months)	(+) 141.71
1989-90	(+) 174.62

Cadre srength

The present cadre strength of the mills is 930 as detailed below :

a) Administrative Office 249 (b) Engineering Department 310 (c) Manufacturing Department 216 (d) Cane Supply and Development 155

Out of 930, 597 are permanent employees and the remaining 333 employees are seasonal employees. For the seasonal employees, retaining allowance is paid during off-season in accordance with the recommendations of the Wage Board. Subsidies are given for cane planting with new varieties. Healthy cane setts are distributed to cane growers. Fertilizers and pesticides are supplied at reasonable cost. Technical advice is given to control pest and diseases. Cane transport is available at reasonable rates. Roads are formed under Sugarcane Road Development Works. Village and field level meetings are conducted periodically.

Residential accommodation, supply of T.C. uniforms, medical benefits, running of primary, elementary, Higher secondary schools for the employees' children, sanction of marriage loan to the employees, group insurance scheme, free film shows periodically, conduct of annual sports, housing loans etc., are provided to the employees.

Other Welfare Schemes

Workers' Co-operative Bank

The staff and workers of the mills had registered a Thrift and Credit Society on 14 November1961 consisting of 57 members with a share capital of Rs.8,200/- initially. The objective of the society is to promote economic savings by way of thrift and also issuing loan to its members at nominal interest. During the initial stages, the mills had advanced term loans as working capital. At present, the society has 817 members with share capital

of Rs.10.03 lakhs besides thrift deposit of Rs.26.76 lakh contributed by the workers and staff of the mills. The society has repaid the entire term loan to the mills. The society issues general loans and article loans at nominal rate of interest from out of its own funds.

Village Adoption

During the year 1975-76, Government of India have introduced 20 point programme having in mind the welfare measures to be undertaken for poor and downtrodden. Adoption of village by major industries is one of the poverty alleviation programmes per the 20 point programme. Accordingly, the mill has adopted Palayanoor, a neighbouring village, by providing basic amenities like wiring of Panchayat Elementary Schools and Adi-dravidar Welfare School, supply of uniform to the children, provision of radio set, construction of milk shed etc. The expenses are met by the mills at a nominal cost around Rs.5,000/-.

Marriage Loan

A sum of Rs.3.6 lakhs has been sanctioned as marriage loan to the sons and daughters of the employees from the mill funds. At present, a maximum amount of Rs.5,000/- is paid as marriage loan for their daughters' marriage and Rs.3,000/- for their sons' marriage. The loan is disbursed on nominal rate of interest.

Manufacturing Process

The cane juice obtained from the mills by crushing cane is heated to about 70°C in primary juice heaters using exhaust steam of turbines for heating and treated with milk of lime and sulphur dioxide gas in a continuous liming and sulphitation vessel to 7.4 pH. The treated juice is again heated to about 102°C in a set of secondary juice heaters and sent to the subsiders known as clarifiers. The precipitates that settle in the subsiders is separately dealt with in vacuum filters to separate the juice and the solid portions known as filter mud. The juice so collected is taken back for the process.

The clear supernatent liquid (after settling of the precipitates) that is coming out of the subsiders is sent to multiple effect evaporators to evaporate the water contained in the juice up to a syrup consistency, containing about 60 per cent dissolved solids. The syrup is further treated with sulphur dioxide gas up to a pH of 5.0- 5.4 and stored in the pan supply tanks before being taken into the pans for crystallisation. Crystallisation in the vacuum pans is done by slurry seeding technique and further developed to the required size as per the necessity. The boiling scheme is adjusted according to the purities of juice and the quality of the final product required. The massecuites boiled in vacuum pans is purged in the centrifugal machines after receiving and storing them in crystallisers as per necessity and the crystals separated out from the mother liquor. This mother liquor is known as molasses henceforth.

The molasses separated is taken to the pan station once again for further exhausting sugar and sent out at the final stage of boiling scheme when further recovery of sugar from that is uneconomical.

The crystals separated in the centrifugal machines are mixed with some quantity of water once again to remove the last traces adhering molasses film and further spun in another battery of centrifugal machines and dried by steam. The dry sugar discharged into the sugar conveyors known as grass hoppers is further dried by blowing hot air through the thin layer of sugar in the second hopper and cooled by blowing cold air in the last hopper and bagged according to size and colour after passing through the graders and finally sent to warehouse with proper I.S.I. Gradings. The process at a glance is explained in the process flow chart in *Appendix-7*.

The Tiruttani Co-operative Sugar Mills Limited

The Tiruttani Co-operative Sugar Mills Ltd., has been established at Thiruvalangadu in Tiruttani taluk about 64 km. away from Madras towards west in the Madras-Tiruvalllur-Arkonam road. The sugar mill started functioning on 1 July1984. Sugarcane is cultivated in three seasons. They are yearly season, mid season and late season. Area under these three plantation seasons during the year 1988-89, was 5212.75 acres, 1968.65 acres, and 1678.60 acres respectively. Area under surgarcane during the year 1989-90 in the three planting seasons was 5138.90 acres, 2485.20 acres and 1790.35 acres respectively and during 1990-91, it was 6557.35 acres, 2348.95 acres and 1320.25 acres. The area under sugarcane cultivation during 1984-85 was 4665 acres; it increased to 8335 acres in 1985-86 registering an increase by 78.67 per cent. During the years 1986-87 and 1987-88, the area decreased to 7000 acres and 5637 respectively. Again in 1988-89, the areas increased to 8860 acres and it further rose to 9414 acres and 10226 acres during the years 1989-90 and 1990-91 respectively[45]. The area cultivated in the year 1991-92 includes 6557-35 acres under yearly season, 2348.95 acres in mid season and 1320.25 acres in late season.

Membership, Share Capital and Employment

Details regarding the total converted members, total share collection, total converted amount and entrance fees collected are illustrated in *Appendix-8*. At the time of inception (*i.e.* 1984-85), the mills provided employment to 328 persons and the strength increased to 432 in the year 1986-87. During the years 1988-89;, 1989-90 and 1990-91, the mills provided employment to 399, 398, and 429 persons respectively. Number of persons employed and wages paid to them per annum from 1984-85 to 1990-91 are tabled in *Appendix-9*. Details regarding the sugarcane production from 1983-84 to 1989-90 are exhibited in *Appendix-10*.

Sugar recovery

The sugar recovery during the year 1983-84 was 4.29 per cent. It showed an upward trend up to 1986-87 which was 9.54 per cent in that year. The sugar recovery during 1987-88 was 8.72 per cent and 9.52 per cent in 1990-91. The details regarding the sugar recovery from the year 1983-84 to 1990-91 are as follows:

Sl.no. (1)	*Year* (2)	*Sugar recovery* (3)
1.	1983-84	4.29 per cent
2.	1984-85	8.31 per cent
3.	1985-86	9.15 per cent
4.	1986-87	9.54 per cent
5.	1987-88	8.72per cent
6.	1988-89	9.44 per cent
7.	1989-90	9.63 per cent
8.	1990-91	9.52 per cent

Sugar sales

Sugar manufactured in the mill is sold calling for tenders by the Tamil Nadu Cooperative Sugar Federation, Madras, after observing the usual formalities. Details regarding the sugar sales during the season from 1983-84 to 1990-91 are tabled below:

Sl.no. (1)	*Year* (2)	*Quantity sold* (in M.Ts.) (3)
1.	1983-84	19.30
2.	1984-85	10288.50
3.	1985-86	27831.00
4.	1986-87	22729.50
5.	1987-88	22699.00
6.	1988-89	27492.80
7.	1989-90	23877.50
8.	1990-91	24115.00

The Motor Cycle Industry

Enfield Indias Limited: At Thiruvothiyur, a northern suburb of Madras, there has sprung up a motor cycle industry, of the biggest of its kind in the east. It is the Enfield India Limited standing near the seashore, beside the train route to Calcutta and Delhi from Madras, with a covered area of one lakh square feet. It was established in November 1955, thereby adding a

new page to the history of industry in the state. Due to rapid growth of population, every city had grown out of proportion to its normal size, resulting in extensions, colonies and suburbs. In the Second Five Year Plan itself, effort was made for the provision of better transport facilities. It was in such circumstances that the Madras Motors Private Limited, obtained a licence for the manufacture of Royal Enfield Motorcycles and three-wheelers. The Industry entered into an agreement with a reputed company called the Enfield Cycle Company Ltd., in the United Kingdom, for technical Collaboration, thereby laying a sure foundation for the successful manufacture of Royal Enfield Motor Cycles in India[46].

New Unit

As a new manufacturing unit, particularly of a pioneering kind, a new company for the manufacture of motor-cycles and three wheelers was started under the name and style, *Enfield India Limited.* The manufacturing licences and the agreement with the Enfield Cycle Company Limited were transferred to the new company and the old licensees were appointed sole selling agents. The industry was started with an initial labour force of 250 men. With the expansion of the industry, the number of workers had also increased. In 1957, the working force was 600, which rose to 750 in 1958, 850 in 1959 and 950 in 1960. Besides a large number of people are employed by their dealers and subdealers all over the country for selling and servicing the company's products.

In 1956, 1100 motor cycles were put on the roads. This figure increased to 1900 in 1957, 2800 in 1958, and 3500 in 1959. Daily, on an average, 15 Engines and 8 Bullets were produced. More than two thousand components go to assemble a motor-cycle. Initially, more than 70 per cent of these components were made in the industry itself. Two varieties of motor-cycles were produced in 1960. One was known as *Ensign* with 1.5 horse power, which would run 192 km, for a gallon of petrol. The other is popularly called *Bullet* which would run 144 km, for a gallon of petrol. It has 3.5 horse power.

Engineering work: Besides producing motor cycles, they undertake work from outside also. They undertake sheet metal fabrication. They make seat frames and luggage carriers and sell them to the Integral Coach Factory, Perambur. They also produce Post Boxes for the Central Postal Department, bus body kits, petrol and water tanks of huge capacity.

Labour welfare: The industry has a well equipped canteen which provides tea, coffee and meals. Special bus facilities are provided for the workers. Recreation Club and facilities for sports are also arranged adequately. More details about labour welfare measures are given in the chapter on *Other Social Services.*

Training Programme: The management also imparts a special training programme, both foreign as well as internal. The selected candidate usually undergoes training at the Redditch works of the Enfield Cycle Company Limited. He is asked to visit various manufacturers and suppliers of motor-cycle components in the United Kingdom and in the Continent. This programme enthuses the employees to put forth their best in their work.

Tube Investments Industrial Establishments

The discovery of Ambattur as an industrial area of vast potentialities was first made by the House of Tube investments. The T.I.I. establishments include T.I. Cycles of India, T.I. Cold Forage, Tube Products of India, T.I. Metal Sections, Wright Saddles of India and T.I. Miller. Besides the factory units T.I. Diamond Chain Ltd., and Teeaya Investment Ltd. are its subsidiaries.

The Wright Saddles of India

The Wright Saddles of India, Ambattur, a Unit of Tube Investments of India Ltd., was established in 1959, and manufactures a wide range of bicycles saddles, - 'Olympic' in collaboration with the Wright Saddle Company Lt. United Kingdom and 'Brooks" in collaboration with J.B. Brooks - and Company Limited, United Kingdom[47].

T.I. Miller

Tube Investments of India Ltd. has set up a medium scale industry at Ambattur in 1962 - titled - "T.I. Miller". The Industry is engaged in manufacturing dynamo lamps for cycles and also industrial lamps. The production capacity of the industry is 60/70 thousand lamps per month. The capital investment of the industry at the time of inception was Rs.0.5 crore and it has risen to Rs.3 crore in 1992. The factory provides employment to 150 persons. A sum of Rs.50 lakh is paid as wages per annum[48].

T.I. Diamond Chain Limited

T.I. Diamond Chain Limited, Ambathur, another T.I. subsidiary established in 1960, is the India's largest producer of roller chains. The factory at Ambathur manufactures automotive and bicycle chains both for original equipment and for replacements and has been successfully catering to the needs of the bicycle and automotive industry. It also manufactures industrial chains. Bicycle chains are exported to England, Australia, Newzeland, Norway, West Germany and the U.S.A. Industrial Chains are exported to Ceylon, Italy, Syria, Australia and the United Kingdom.

Tube Products of India

Tube Products of India at its Avadi factory set up in 1955 manufactures TRU-WEL electric resistance welded tubes and cold drawn welded. The company has at its disposal all the specialised knowledge, the latest researches and the vast experience of Tube Products Limited, Oldbury

(a member of the T.I. Group in U.K.), who are pioneers in the manufacture of electric resistance welded steel tubes in Europe. TRU-WEL tubes provide the framework for cycles (over 80 per cent of the cycles made in India are built with them), cooling tubes for transformers and boilers make possible the turning out of a large variety of sleek, inexpensive and light tubular furniture for homes and hospitals and cater to the bewildering growth of other light engineering needs.

Cold-rolled Steel Strips

Tube Products of India also produces at its cold rolling mill installed in 1962, the cold-rolled steel strip in a variety of tempers, edges and finishes for a variety of end uses.

T.I. Metal Sections

T.I. Metal Sections, has been formed in collaboration with Metal Sections Limited, Birmingham, also a subsidiary of Tube Investments Limited, United Kingdom. This unit manufactures cold rollformed sections. "Metsec" ready to use cold rollformed metal sections offer uniformity, precision and strength and are increasingly, used in electrical, furniture, body-building and roller shutter industries.

T.I. Cycles of India, Limited

The T.I. Cycles of India Limited, has set up its factory at Ambathur, about 18 km., from Madras in an area of about 55 acres. T.I. Cycles are closely associated with and have the active support of one of the world's renowned cycle manufacturers, the Hercules Cycles and Motor Company Limited, Birmingham and the leading designers and the largest producers of all kinds of steel tubes, the Tube Investments Limited, United Kingdom[49].

The T.I. Cycles factory consists of two units namely, plant-I and plant-II. Plant-I manufactures and assembles of complete bicycles and plant-II manufactures bicycles making for exports. The first assembly unit was formally opened on 26 September 1951 by His Excellency the Maharaja of Bhavanagar, the then Governor of Madras. The second components unit was declared open by His Highness, the Maharaja of Mysore, on 29 January 1954.

The first unit started with all the manufacturing processes of making frames, forks, chain stays and seat stays as also the finishing processes of enamelling, plating, etc. In the initial stage, the completion of assembly of cycles was largely done with imported components to ensure quality. In 1952, the imported components in a cycle produced in this factory comprised 83.87 per cent. Gradually, this has been reduced as local skill gathered competence and more parts were manufactured in Ambathur. While the imported component in a cycle represented 38.37 per cent in 1957, it was only 28.45 per cent in 1959[50].

The factory employed 283 people in 1952 which rose to 905 in 1955 and 1682 in 1959. The production of cycles made steady progress. 36,790 cycles were produced in 1952 and the production rose to 89,041 in 1955, 1,29,922 in 1956 and 200,676 in 1959 and 13,00,000 in 1991. The factory exports cycles to Myanmar and the Middle East, Europe and certain African countries. The cycles manufactured at Ambathur were known by the trade mark "Hercules - India" till April 1955 when it was changed into "Hercules". The T.I. Cycles began producing the famous Phillips Cycle in association with Messrs. J.A. Phillips and Company Limited, Birmingham, a subsidiary of Tube Investments Limited, United Kingdom and have also entered into an agreement with Brampton Fittings Limited United Kingdom, another subsidiary of Tube Investments Limited. to manufacture bicycle fitting in their well known brand name "Brampton". The scheme for the manufacture of saddles for bicycles under the name of "Wright Saddles of India" are implemented. Consequent on the expanded scope of their business, a formal change in name was effected on September 16,1959, whereby T.I. Cycles of India Limited, now functions in the name of the Tube Investments of India Limited. The authorised capital, under the joint ownership of Tube Investments of India, Limited, comprising all the units was Rs.16 crore and the issued capital was Rs.6.85 crore, in 1991-92.

Labour Welfare

The factory has a canteen where food and snacks are served at subsidised rates. The canteen is entirely run by TIC Cooperative Canteen Limited. There is a spacious ground for outdoor games and well equipped premises for indoor games. Besides the Statutory Provident Fund there is also an Employees Cooperative Thrift and Credit Society. The Society constitutes thrift deposit and long-term loan schemes to throw succour to the needy members[51]. More details about the welfare measures undertaken for the workers are given under the chapter on "Other Social Services".

Ashok Leyland Limited

Ashok Leyland Limited, is situated at Ennore, a suburb of the city of Madras on the Madras- Culcutta railway line. The company was originally engaged in the assembly and sales of Austin cars and trucks in India. It is now engaged in the manufacture of Leyland vehicles. The factory comprised an area of 134 acres in 1960. Buildings in existence covered about 2,76,000 square feet and new buildings covered an area of 87,600 square feet. Plant and machinery to a total value of Rs.2 crores had been installed and further installations were also continued. In 1950, the company acquired the rights of manufacture and sales in India from Leyland Comet commercial vehicles. Since then, it has been assembling Leyland "Comet" chassis from c.k.d. packs imported form Leyland Motors, Limited, United Kingdom. The company got approval form the Government of India in 1954,-a phased programme

for progressive manufacture in India of Leyland Comet chassis. The company devoted its resources solely for ensuring assembly, organising for expansion of its output of finished chassis and improving the standard of inspection and testing of vehicles before delivery.

In December 1950, the paid up capital of the company was Rs.32,45,480/- and it rose to Rs.54,56,500/- in 1955 when the Leyland Comet manufacturing project was inaugurated in collaboration with Messrs. Leyland Motors Limited, which participated to the extent of 49 per cent of the capital of the company. The authorised capital of the company which was originally Rs.2 crore was increased to Rs.3.25 crore in 1958. The paid-up capital of the company as on 31 December 1958 was Rs.1,87,10,000 of which the Leyland's holdings amounted to Rs.85,00,000/-. In 1956, components representing approximately 15 per cent of the cost, insurance, freight value of complete chassis were manufactured at the factory and at the end of 1957, they were able to achieve as high a percentage of 36 per cent of the cost, insurance, freight value of a complete chassis. At the end of 1959, it was able to achieve a percentage of nearby 60 per cent of the cost, insurance, freight value of the complete chassis. Subsequently, the company got licence for the manufacture of heavier Leyland Tiger Titan Vehicles. The engines are the famous Leyland "600" and "680" diesel engines developing maximum torques of 410lb. feet, at 900 R.P.M. and 450 lb. feet at 1100 R.P.M. respectively, the corresponding H.P. being 125 at 1800 R.P.M. and 150 at 20,000 R.P.M. These two engines are standard fittings in the complete range of Leyland heavy duty goods vehicles and the Leyland *Tiger* and *Titan* chassis in categories heavier than the *Comet.*

Apprenticeship Scheme

There are three main classes of apprentices in training at the factory. They are Graduate Apprentices, whose period of apprenticeship is three years engineering apprentices who complete a period of three years as apprentices and trade apprentices who complete a period of five years training. In addition, there are trade trainees specialising in particular trades and apprentices who are sponsored by the various governments for training in the factory. The company has immensely increased employment opportunities in the locality and the figures of employment rose from 350 in 1955 to 1000 in 1958 and to 1500 in 1960.

The Standard Motors

The Standard Motor Products of India, Limited, who are the manufacturers of the "Standard" Cars in India started functioning in 1948 with an authorised capital of rupees one crore, with the joint collaboration of the Standard Motor Company of Coventry. U.K.

Early Beginning

The company started working first in an Aero-hanger at Chrompet, belonging to the Government of Tamil Nadu and the first 'Vanguard'came off the lines in July 1950. By the end of 1950, assembly of "Ferguson" tractors was also taken up. For the factory with an area of 59 acres, was acquired at Vandalur, about 28km. from the Madras city on the Grand Southern Trunk road, and the foundation for the present Standard Motor Factory was laid in January, 1951. Production commenced in the new factory in January 1952.

The firm had a fixed capital worth Rs.99 lakhs in 1958 as compared to Rs.41 lakhs in 1950. Total number of employees in 1950 was 200 which rose to 1200 in 1959. Although production was, at first, restricted to passenger cars of "Standard Eight" and Vanguard models and assembly of "Ferguson" tractor, a new ten-horse power saloon version was introduced in 1954.

With the shift in government policy, the company had to confine production to small cars and consequently had to give up the Standard Vanguard. In view of the progress achieved in the indigenisation of Vanguards, it was felt that this could be utilised to manufacture light commercial vehicles. But it was the fact crisis in 1973 which really changed the course of SMPT. What had threatened to bring about the disaster of the company served to set the pace for further advancement. Seasoned professionals at SMPI engineered a shrewd shift in product policy at this point which resulted in the production of the Standard-20, this time with a diesel engine. This was the major breakthrough which proved to be the turning point in the history of Standard Motors. A significant feature of the development of Standard Motors is the close links it has maintained initially with the Standard Motor Co. Ltd. Coventry. Subsequently, the British Leyland Corporation of which the Austin Rover Group is a part. These links have enabled Standard Motors to acquire latest technology at the most opportune moment.

The 2.12 lit. diesel engine which has earned a very good reputation in the market, having powered more than 40.000 Standard - 20 LCVs and the 2.52 lit. diesel engine and the modern gearbox which power the three tonne range of vehicles including the 21 seater "Countrymen", are all successful examples of adopting modern European design to arduous Indian road/load conditions. That components for the 2.52 lit. diesel engine and the finished diesel engine are re-exported to the United Kingdom for fitment to London Taxis, is an eloquent testimony to the quality levels being maintained at Standard Motors through effective technology transfer. It is modernising its manufacturing facilities with up-to-date technology.

During 1992, there are over 40,000 Standard-20 diesel vehicles on the roads, plying as delivery vans, pick-up trucks, ambulances mini buses, micro lorries and many other versions customs built to suit customers' requirements.

Sri Ram Fibres Limited

(Fibres and Plastics Group)

The Fibres and Plastics Group of SRF Limited, a private concern, has set up an Industrial Synthetics Division in the Manali Industrial area in 1974 for manufacturing Nylon tyrecord fabric, Nylon tyreyarn Fishnet yarn, other industrial yarns. It is a major industry which is located 20 km. away from Madras[52].

The installed capacity of synthetic filament yarn is 7910 MT; and the nylon tyrecord fabric is fabric 6750 MT. The capacity of the leather auxillaries (organic chemicals) 350 MT and the nylon moulding power is 500 MT. The actual production capacity of spinning (yarn) conventional is 7525 MT; spindraw (UTK) is 2100 MT and fabric is 8995 MT per annum.

The total capital investment at the time of inception in 1975 was Rs.11.01 crore and it has risen to Rs.96.77 crore as on 31 March 1992. The quantity of products manufactured from the year 1988-89 to 1991-92 is as follows:

Year (April-March)	*Nylon tyre-cord*	*Nylon tyre yarn*	*Nylon moulding powder*	*Total* (MT)
1	2	3	4	5
1988-89	3409	1564	514	5487
1989-90	5665	3369	1043	10077
1990-91	5552	3553	1368	10473
1991-92	6852	2059	1257	10185

The company has technical collaboration with M/s. Unitika Limited, Japan. In 1983, a substantial expansion was carried out by the company's personnel. In the year 1988-89, a State of Art Spindraw Technology was installed in technical collaboration withM/s. Unitika Limited, Japan. The production capacity of tyrecord fabric was substantially increased in 1991. The industry procures raw material caprolactum from M/s. Gujarat State Fertilizers Company Limited, Gujarat, and the Fertilisers and Chemicals Travancore Limited, Cochin. Imports are mainly from Europe. At the time of inception, 686 persons were employed and the strength has increased to 1122 as on 1 April 1992. There are two employees associations, *viz.*, Shriram Fibres Employees Union and Shriram Fibres Staff Association. The entrepreneur is a member of the Employees Federation of Southern India.

The manufacturing Process of Nylon tyrecord fabric, Nylon tyreyarn cord and Nylon moulding powder in narrated in *Appendix-11.*

Hindustan Motors Limited, Tiruvallur

Hindustan Motors Limited has been a pioneer in the automobile industry in India since 1942. The Earthmoving Equipment Division was set up at Melnallathur 5 km away from Tiruvallur and 46 km from Madras in 1969 in technical collaboration with General Motors, U.S.A., for manufacturing earthmoving machines, Over 5000 Hindustan earthmoving machines from the Tiruvallur plant are already working all over the country. After successfully absorbing technology from General Motors, the company has now tied up with Caterpillar Inc., U.S.A. The current product line in the Earthmoving Equipment Division includes Dumpers, Loaders and Crawler Tractors of various capacities. It is a major industry under private sector and it has an installed capacity of 630 machines of Earthmoving equipments. The comparative study of the capital investments at the time of inception *i.e.,* as on 31 March 1972 and 31 March 1992 is as follows[53]:

Item	*As on 31 March 1972*	*As on 31 March 1992*
1	2	3
	(Rupees in lakhs)	
Land	5.78	65.17
Buildings	17.16	1021.39
Machines and Equipments	32.21	4466.06
Furniture and Fittings	2.84	171.51
Vehicles	0.79	35.19
Total	58.78	5759.32

Products manufactured and quantity produced as on 31 March 1992 are as follows[54]:

Name of the product			*Quantity as on 31 March 1992*
Dumpers	1025-25 Ton	E	46
		A	29
	1035-35 Ton		150
	1160-55 Ton		-
	773B-50 Ton		21
	777B-85 Ton		2

Loader	IT 12 1 Cu.M.Bucket Capacity	6
	2021 1.24 to 3.1 Cu.M.	210
	966E3.1 Cu.M.	11
	2071 5.7 Cu.M.	20
	Crawler D & H	9
	Total	504

In the year 1971, the company, had collaboration with General Motors, USA. From 1984, the company is having foreign technical collaboration with M/s. Caterpillar Inc.U.S.A. Raw material is procured indigenously and also imported from foreign countries. Number of persons employed in the company and also the salary including bonus disbursed to them in the following years are noted against each[55].

Year	*Staff*	*Workmen*	*Total*	*Salary including bonus disbursed*
1.	2.	3.	4.	5. (Rs.in lakh)
1984-85	633	659	1292	259
1985-86	646	709	1355	347
1986-87	651	660	1311	354
1987-88	661	748	1409	365
1988-89	660	744	1404	541
1989-90	698	767	1465	553
1990-91	776	713	1489	581
1991-92	698	816	1514	772

Hindustan Motors Workers Union is a registered association for the employees in the factory. The industry is a member of confederation of Engineering Industries, Southern Region, Madras.

Western India Match Company Limited (WIMCO Limited)

Western India Match Company Limited popularly called WIMCO Ltd., a private concern has set up a major industry at Thiruvothiyur about 12km, north of Madras for manufacturing safety matches. The industry was started in the year 1923. The installed capacity of the industry is 765 million match boxes and the actual production capacity is about 764 million boxes. The total capital investment is about Rs.40 crores, of which 39 per cent Equity shares are held by Swedish Match, Sweden. The raw materials purchased are Splints from Kerala Card Board, BPL from Hyderabad, Parraffin from Madras Refineries and Chlorate and TCM from Kerala for manufacturing

safety matches. The industry provided employment to 1800 workers in 1923 whereas in 1991 there are only 700 persons on Roll. A sum of Rs.1.5 crores is paid as wages per annum. On the workers side, the Western India Match Factory Workers' Union and for the employers. The Employers Federation of South India, are looking after their welfare[56].

EID Parry (India) Ltd.

The E.I.D. Parry (India) Limited, a private enterprise has established a major compound fertilizer plant at Ennore in the year 1963 for the manufacture PARAMFOS - Fertiliser, and intermediate products such as sulphuric acid and phosphoric acid. Gypsum is produced as by-product in the factory. The factory is situated 15 km away from Madras. The installed capacity of the plant is 52300 MT per annum (Fertiliser 16:20:0), re-endorsed licensed capacity is 94188.

Tonne per annum and the actual production capacity of the factory is 1,00,000 MT per annum. The quantity of products manufactured in the factory is as follows[57]:

			Quantity (MT per annum)	
i)	Finished products			
	PARAMFOS-Fertiliser	:	1,00,000	(approx)
ii)	Intermediate Products	:	1,00,000	,,
	(a) Sulphuric Acid	:	1,00,000	,,
	(b) Phosphoric Acid (as 100 per cent p.205)	:	20,000	,,
iii)	By Product - Gypsum	:	1,00,000	,,

Raw materials such as Ammonia, Sulphur, and Rock phosphate are imported through Consortium of all the users.

Manufacturing Process

(i)	Sulphuric Acid Plant	-	Contact Acid - Double conversion Double Absorption(DCDA) process using Sulphur as raw material.
(ii)	Phosphoric Acid Plant	-	Wet process prayan - Belgium using rock phosphate as raw - material.

(iii)	PARAMFOS - Ammonium Phosphate-Sulphate (16:20:0)	-	DORRCO -Granular Ammonium Phosphate - Sulphate Process.

During 1963, 388 persons were employed in the factory and an amount of Rs.9,60,000/- was paid to them as wages per annum. In December 1985, the total number persons employed in the factory was 346 and in March 1992 it was 311. During 1992 a sum of Rs.114,18,554 per annum, was paid as wages as against Rs.52,91,000/- in December 1985. On the employees side, the factory has E.I.D. Parry Employees' Union and on the employers' side, it is a member of the Employers Federation of Southern India.

The K.C.P. Limited

The K.C.P. Limited, a private concern, has set up a major industry at Thiruvothiyur which is 10 km, from Madras in the year 1952 at a cost of Rs.13.11 lakh to manufacture machinery and equipment for complete sugar plant, cement plant, chemical, steel mineral processing industries, gears, pinions etc. The capital investment in 1960 was Rs..89.01 lakh and it increased to Rs.452.96 lakh in 1970, and 793.66 lakh in 1980. The total investment during the year 1990 has risen to Rs.2309-37 lakh. The plant produces about 5000 tonnes of machinery and equipment for complete sugar plant, cement plant, chemical, steel, mineral processing industries, gears, pinions, etc., per annum. Raw materials such as steel materials are procured from the Steel Authority of India and also from open market. Manufacturing process includes costing, machining and fabrication. During 1952, the industry provided employment to 170 persons. In 1991, there are about 720 persons working in the industry including 200 management staff. Workmen have "Workers Union" affiliated to A.I.T.U.C., while the staff members have "Staff Union" without any affiliation.[58] The K.C.P. has membership in Employers Federation of South India, Confederation of Engineering Industry, Sugar Machinery Manufacturers' Association and Cement Machinery Manufacturers' Association.

Indra Cotton Mills Limited, Chrompet

The company, Indra Cotton Mills Limitied, one of the leading Spinning Mills in the Textile Industry in Tamil Nadu is located at Jagampet Gardens, Chrompet which is located about 25 km, from south of Madras. It is a medium scale industry. The company was incorporated on 20 January 1956 as a Private Limited Company by Shri A.L.CT. Chidambaram Chettiyar, an industrialist of Kottaiyur near Karaikudy of Pasumpon Thevar Thirumagan District. The company started its commercial production *viz.,* manufacture of yarn, in June 1957, with an installed capacity of 6728 spindles by making an investment of Rs.13/- lakh under fixed assets. The installed capacity rose to 16,380 spindles within a short span of four years. A stage by stage expansion programme implemented is tabled below[59]:

Year 1.	Installed capacity (spindles) 2.	Licensed capacity (spindles) 3.
1961-65	17,220	18,000
1966-70	25,200	25,200
1971-75	25,200	25,200
1976-80	28,656	32,200
1981-85	36,432	40,320
1985-90	40,320	40,320

The company had established another unit in a separate building block naming it as 'B' Unit,- commercial production of which was started in February, 1986 exclusively for production of staple fibre yarn and polyester fibre yarn. Now, the total installed capacity of both the units of the company is 40,320 ring spindles. The total capital investment in Fixed Assets is around Rs.481 lakh. The company has enough captive power to generate its own power to cope up with the power cut even to the extent of 100 per cent. The company manufactures cotton yarn, cotton and viscose blended yarn. Polyester and Cotten blended yarn and polyester and viscose blended yarn. The turnover of the company is about Rs.16 crore per year and the entire production is sold through their own depots located at Bombay, Ichalkaranji in Maharashtra and Umbergaon in Gujarat. The company buys cotton from regular suppliers at Maharashtra, Karnataka, Andhra Pradesh and other cotton growing areas. The synthetic fibre is bought from suppliers in Madhya Pradesh and Karnataka, depending on the quality of cotton and synthetic fibre and their suitability to various counts spun considering the market conditions from time to time. The present labour strength is about 450. Most of the workmen are provided with residential quarters.

Amrutanjan Limited

The Amrutanjan Limited has set up a Research and Development Unit in the year 1987 at Egattur near Kelambakkam at a cost of Rs.1,47,10,617/-. It is located about 15 km from Thirupporur and 26 km, from Madras. During 1987, there were only seven persons employed, but the present strength is 13. The company buys chemicals, solvents and other raw materials requried, from local suppliers. They are also imported, wherever necessary[60].

Brakes India Limited

The Brakes India Limited, a group concern of T.V.S. and Sons (P) Limited, has established a medium scale industrial unit at Padi, 15 km, away from Madras in the year 1964, for manufacturing Foundation Braking

equipment and parts thereon for cars, commercial vehicles, tractors and trailors. The installed capacity of plant in respect of complete Brake System is 2,40,000 (sets) and Casting MT 6250. The licenced capacity during 1990-91 with regard to complete Brake system is 2,69,000 (sets) and casting MT 5000. The plant had a capital investment to the tune of Rs. 73.04 lakh in 1964 and it increased to 6143.47 lakh in 1990-91. The industry is functioning with 49 per cent of the foreign equity capital.

Major raw materials used in the products are steel sheets, steel bars, ferrous castings, aluminium castings, aluminium bars, steel forgings, brake linings, brass stampings, rubber and rubber components, plastics and other hardwares. Raw materials are supplied by the Steel Authority of India, Tube products of India, Chase Bright, GKW, Bhartia Commercial, India Tube Mills, Rane Brake Linings, Sundaram Abex, Hindustan Ferodo, Eltex Super Castings, Crown Castings, Business Combines Limited, Hindalco, Chandur Forgings, Sundaram Industries, Standard Springs, Sundaram Fasteners and Hindustan Springs. The industry provided employment for 143 persons in 1964. The strength has increased to 2210 in 1990-91[61].

Brakes India Limited, Employees Association is an affiliated body of the Tamil Nadu National Engineering Employees' Union and the Employer Association is a member of the Federation of Indian commerce and Chamber of Industry.

Wheels India Limited

The Wheels India Limited, has set up its factory at Padi in 1960 for the manufacture of wheels for commercial vehicles, tractors and defence vehicles and wire wheels[62]. It is a medium scale industry established under private sector. It is located about 12 km. from Madras. The total installed capacity of the factory was 3,20,000 wheels and this increased to 22,00,000 in 1992 and the actual product for the year 1990 was 23,51,918 and the production in 1991-92 was 23,12,309. The total investment at the end of 1962 was Rs. 161.66 lakh and subsequently it increased to Rs. 6909 lakh. 2.1 million wheels were manufactured in the unit in 1990-91. The industry is functioning in collaboration with Dunlop Limited, U.K. which holds an equity share of 35.91 per cent. The industry provides employment to 1291 persons and a sum of Rs. 1040 lakhs was paid as wages in 1991-92. Raw materials are obtained from Steel Authority of India Limited, Tata Iron and Steel Company Limited, Partap Steel Rolling Mills (1935) Limited, Amritasar, Deccan Profiles Limited, Hyderabad and Pickfab Engineers, Madras.

Manufacturing Process

The wheels consists of four components, *viz.*, discs, rims, flanges and lockrings. The disc is made out of MS plates. The process involves various operations on presses like blanking, forming, piercing, etc. The rims are made out of plate material. The process involves operations like circling,

butt welding, flash cutting, forming and sizing. After the rims and discs are completed, they are assembled together and welded. Further operations on the assemblies like multi drilling and multi countersinking of the bolt holdes are done and then they are sent through conveyorised paint plant. The flanges and lockrings are made out of hot rolled sections and undergo operations like circling, butt welding, sizing, etc., before getting painted. The assembly involving rim and disc assembly, flange and lockring is done in the warehouse before despatch.

Personnel Management

Initially in 1960, the industry provided employment for 100 persons and in 1991 about 1250 persons are employed. A sum of Rs. 760 lakh is paid as wages. Wheels India Workers Union affiliated to INTUC is meant for the employees while two organisations, *viz.*, the Employers' Federation of Southern India and Confederation of Engineering Industry are for the employers.

The India Cements Limited-Foundry Division

The India Cements Limited has set up a foundry unit at Nandambakkam on the Mount Poonamallee road which is located 4 km, from Guindy and 20 km, from Madras[63]. It is set up under private sector with the installed capacity of 5280 M.T. per annum and the actual production capacity is 4800 M.T. of cement per annum. It is a medium scale industry which is engaged in the manufacture of grey iron, nihard, C.I., S.G. iron (ductile), manganese steel, B.H.M., and white iron castings. The capital investment during 1965 was Rs. 47.50 lakh and in 1991 it rose to Rs. 310.11 lakh. Raw materials, *viz.*, pig iron is purchased from SAIL, while other raw materials are purchased from private traders. The industry provided employment to about 264 persons in 1965 and during 1991 the strength increased to 565. A sum of Rs.9.2 lakh is paid as wages per month.

Sri Bagavathi Tea Estates Limited

(Beverages Division)

Sri Bagavathi Tea Estates Limited, owns also a fruit juice based beverage unit at Mevalurkuppam village, in Sriperumbudur taluk on Madras-Bangalore highway which is 8 km, from Poonamallee and 32 km, from Madras[64]. The Beverages Division was first promoted by M/s. Sakthi Beverages Limited, under private sector in the year 1987 and the business as a whole was purchased by M/s. Sri Bagavathi Tea Estates Limited, on 25 March 1991. The installed capacity of the plant is 51 million packs of 200 ml. each. The capital investment at the time of inception of M/s. Sakthi Beverages Limited was Rs. 342 lakhs. The industry is now under the control of M/s. Sri Bagavathi Tea Estates Limited and the capital investment during 1991 is Rs. 311 lakhs. It is a medium scale industry. Raw materials are bought

indigenously. The finished products *viz.*, fruit juice based beverages are sold under the brand name FROOTI, APPY AND PINGO. During the year 1990-91, 23.6 million packs of 200 million were produced.

Manufacturing process

Fruit pulp/juice concentrate/Juice is mixed with sugar syrup, citric acid, flavouring material and mixed with treated water to make ready Fruit Beverages. The products are packed in Aspetic condition in Tetia packs. During the Year 1987, 30 employees were working in the plant and the strength has risen to 50 in 1991[65].

Tamil Nadu Dadha Pharmaceuticals Limited

M/s. Tamil Nadu Dadha Pharmaceuticals Limited, has set up its plant in Dadhanagar in the year 1973, which is 3.5 km, from Pallavaram and 25 km, from Madras. It is a medium scale industry and promoted under joint venture with Tamilnadu Government. It is engaged in the manufacture of formulations and bulk drugs. The capital investment at the time of inception of the plant (1973) was Rs. 36.25 lakh and as on 31 March 1990 it has risen to Rs. 734.35 lakhs. The installed capacity of the plant on single shift basis is as follows[66]:

Sl.no	*Item*	*Quantity* (in lakh)	
		1990	*1989*
1.	Tablets	5110.00	5110.00
2.	Capsules	600.00	540.00
3	Liquids (klts)	400.00	400.00
4.	*Parenterals:*		
	Ampoules	240.00	75.00
	Vials	120.00	50.00
	Transfusions	48.00	12.00
5.	*Ointments and External Applications:*		
	Jars	3.20	3.20
	Tubes	41.00	41.00
	Vials	30.00	30.00

The actual production including finished products purchased is shown below:

Sl.no	Item	Quantity (in lakh) 1990	1989	
1.	Tablets	6476.18	4989.01	
2.	Capsules	574.68	370.71	
3.	Liquids	514.73	297.90	
4.	*Parenterals:*			
	Ampoules	96.08	56.10	
	Vials	50.08	40.11	
	Transfusion	37.87	25.97	
5.	*Ointments:*			
	Jars	1.68	0.65	
	Tubes	9.63	7.66	
6.	Bulk Drugs	* 270.15	* 133.21	(Tonnes)
7.	Powders	8.48	32.77	(Tonnes)

(*Figures of Production include production for captive consumption)

Major part of the raw materials used for the manufacture of formulations and drugs are indigenously available. Manufacture of bulk drugs involve organic synthesis. Manufacture of formulations involve various steps such as cutting, granulation, misering, grinding, filling, etc. Initially in 1973, the plant provided employment to 150 persons, and in 1991 there are 330 people working in the unit.

The Chrome Leather Company Limited, Chrompet

The Chrome Leather company Limited, a private concern, has set up a factory at Chrompet, 18 km, from Madras for manufacturing tanned leather, I.L.G. and Ginning, washers, chappals and shoes in the year 1908 at a cost of Rs. 7,00,000/- . The installed actual capacity is as follows[67]:

Item	*Installed Production*	*Actual Production*
Tanned leather	6.6 lakh PCs	28697 PCs.
ILG and ginning washers	1.1 lakh PCs	46020 PCs.
Footwear	7.0 lakh pairs	358 pairs

A quantity of 3 lakh sq.ft. tanned leathers, 10,000 I.L.G. and ginning washers and 250 pairs of chappals and shoes are manufactured per month. The factory provides employment to 209 persons and roughly a sum of Rs. 40 lakh is paid as wages and salaries every year. The Chingleput District Tannery Workers Union is looking after the employees' welfare.

Montech Hydraulics Pvt. Ltd.

M/s. Montech Hydraulics Pvt. Ltd., a private concern, has set up a medium scale industry in the year 1985, in the Gummidipoondi Industrial Estate which is 45 km. away from Madras at a cost of Rs. 1.5 crores to manufacture high rise working platform of different types, hydraulic cylinders, Rotary Joints, Accumulators and Defence equipment. The installed capacity of the plant is about 3.5 crores. The company has technical collaboration with M/s. Montan Hydraulic, West Germany for producing cylinders; and with M/s. Alfred W.Weber, and M/s. Helmut Kempkes, West Germany for manufacturing high rise working platform. Casting forgings, pipes, rounds, steel plates and structurals for manufacturing finished products are bought indigenously while cold drawn seam less tube and high pressure seals are bought outside. During inception, the company provided employment to 25 persons and in 1991, there are 112 persons working in the factory and a sum of Rs. 13.85 lakh is paid as wages per annum. The employees have union which is affiliated to Gummidipoondi SIPCOT and Engineering Employees Union. The company is a member of Industrial complex Manufacturers' Association[68].

Easun Machine Tool Works

Easun Engineering Co. Ltd., a private concern and a pioneer industry in engineering works has set up Easun Machine Tool works on Madras Tiruvallur High road at Tiruninravur in Sriperumbudur taluk of the district which is 33 km. away from Madras and 11/2 km. away from Tiruninravur town. It is a medium scale industry. The industry commenced production from July 1982 with an installed capacity of 27 machines with 334 HP and the production capacity is Rs. 84 lakh per annum. The initial investment was Rs. 75 lakh and later, investment to the tune of Rs. 15 lakh has been added. The industry provided employment for 50 persons at the initial stage incurring a sum of Rs.25,000/- as gross wages per mensem. During September 1991, the strength of the employees has increased to 120, incurring a sum of Rs.1,66,540/- as wages[69]. The unit is engaged in reconditioning of machine tools, multipurpose machines, etc. The unit has reconditioned about 260 machines till 1991. Machining operations like turning, milling gear cutting and grinding are done in the unit. The customers of the industry are BHEL, BEML, Southern Railway, Southern Structurals, HAL, Defence factories, TNSI, Scooters India Ltd., etc., of Public sector companies and KCP, Rane (India), Simpson, Enfield, Ashok Leyland, TVS Best and Crompton, Escorts, Bharat Forge, Hindustan Motors, Binny Engineering and Co., Engine Valves, etc., under private sector. This company is a member of the Madras Chamber of Commerce and Industry. Employees' Association in the industry are Tamil Nadu National Engineering Employees' Union (INTUC) and Easun Engineering Company Employees' Union.

The Indian Steel Rolling Mills Ltd.

The Indian steel Rolling Mills Ltd., a private company, has established a medium scale unit at Tiruninravur in Sriperumbudur taluk in the year 1966 with an installed capacity of 66300 MT., for manufacturing steel bars/rods (both plain and CTD) by reheating billets and re-rolling into bars/rods. The actual production capacity is 22,000 M.Ts. The capital investment of the industry at the time of inception was Rs.104.00 lakh and subsequently, it increased to Rs.390.84 lakh. In the year 1990-91, a quantity of 21875 M.Ts have been produced. The company gets raw materials from the Tata Iron and steel Co. Ltd[70]. In 1990-91 there are 300 persons under employment and a sum of about Rs. 107 lakh in disbursed as wages. The company is a member of the Employers' Federation of Southern India. The ISRM Staff Workers' Union is looking after the welfare of the employees.

Empee Distilleries Limited

M/s. Empee Distilleries Ltd., a private concern, has established a medium scale distillery unit at Mevaloorkuppam in Sriperumbudur taluk in the year 1984. The unit is located on the Poonamallee - Bangalore High road which is 12 km. From Poonamallee on the west, 7 km. from Sriperumbudur on the east and 32 km. from Madras. The distillery is engaged in the manufacture of Indian Made Foreign Liquor, (IMFL) such as Brandy, Whisky, Rum and Gin. The installed capacity of the plant is 2500 cases of IMFL and the plant is functioning with its full capacity. The capital investment of the plant in 1984 was Rs. 45 lakh which has increased to Rs. 150 lakh in 1990-91. The raw materials used for manufacture of IMFL are rectified spirit/ neutral spirit, malt spirit, grape spirit and scotch whisky and they are procured from various distilleries[71]. The distillery plant had provided employment to 40 persons in 1984 and the strength has increased to 225 in 1990-91. Details of wages paid to the employees from 1984 to 1990 are - in 1984 Rs. 22,500 in 1985-Rs. 1,98,000. in 1986-Rs. 2,64,000, in 1987-Rs. 10,77,654.60. in 1988-Rs.8,25,964.60, in 1989-Rs. 6,03,733.50 and in 1990-Rs. 2,55,110.50.

Facit Asia Limited

Popularly known as FACIT, the Facit Asia Ltd., one of the reputed private companies in typewriter making, has established a medium scale industry at Perungudi in 1962 for manufacturing manual electronic typewriters, precision engineering plastic injection moulded components, jigs, fixtures, moulds, dies, press tools and forming tools. The installed capacity of the plant in 1991 to manufacture manual and electronic typewriters is 45,000 while for precision engineering plastic injection moulded components, the installed capacity is 120 M.Ts. The actual production in 1991 is 26428 manual/ electronic typewriters and 24 M.Ts. precision engineering plastic moulded components. The total value of jigs, fixtures, moulds, dies, press tools and forming tools produced is Rs.22.94 lakhs as against the installed capacity of

Rs.100 lakhs. The initial paid up capital of the plant in 1962 was Rs. 30 lakhs which subsequently increased to Rs.191.10 lakhs of which 26 per cent is foreign investment.

The important raw materials used are cold rolled steel strips from Graham Firth (India) Ltd., Bombay, Tube Products of India Ltd., Madras, and Bright Bars from India Tube Mills, Bombay, and Plastic Raw materials from Baroda. The Facit Asia Employees' Union looks after the welfare of the Employees Federation of South India. At the time of inception of the company, the total number of employees on the whole was 45. The number of employees has risen to 651 in the year 1991. So also, the wages paid to the employees at the time of inception was only Rs. 3939/-. But the wages now cleared by the company in 1990-91 comes to Rs. 2,41,65,729/-[72]. It may thus be seen that the activities of this medium scale private industry are steadily increasing.

Britannia Industries Limited

The Britannia Industries Limited, a private industry with its Registered Office at Calcutta has set up its plant at Padi in the Ambattur Industrial Belt of the district in the year 1964. It is a medium scale industry producing a wide range of high quality of biscuits that are very popular in the market. It has now a work force of about 1100 employees. Flour, milk, vanaspathy, sugar, essence, etc., used as raw materials which are all domestic products, easily available to procure[73].

Welfare Programmes

Britannia Industries Employees Welfare Association is a joint forum with representatives from both the management and the employees. It is an association under the Tamil Nadu Societies Registration Act. Workmen are members of this association.

A General Welfare Fund has been created by a monthly subscription of Rs.8/- per employee and the company contributed Rs. 16/- per employee. From this general fund, various monetary relief funds have been provided. If an employee expires while in service, the Welfare Association donates Rs. 25,000/- from its Death Relief Fund apart from Rs. 5000/- given by the Management to the deceased employees' family. An emergency release of Rs. 500/- in the case of employees' death and Rs.300/- in the case of death of the employees' family members are given for performing the last rites, as funeral assistance. In the case of retirement, a sum of Rs. 15,000/- is given to the retiring employee from the Welfare Associations Retirement Benefit Fund. Medical assistance is also given to the sick employees. A Family Planning Assistance of Rs. 100/- is given to employees undergoing sterilisation operations.

Britannia Industries Employees Co-operative Thrift and Credit Society is a joint endeavour of both employees and the management and it was started in the year 1971. The Society provides to its members Medium Term Loan of Rs. 15,000/- and Special Emergency loan of Rs. 1000/- at a nominal interest. The society also declares dividends every year to its members on their share capital. Britannia Industries Employees Cooperative Stores established in 1982, supplies provisions and other essential commodities on cash or credit basis to the employees. There is a cooperative canteen and a recreation club in the industry exclusively for the employees.

Sharon Granites Factory, Gummidipoondi

Sharon Granites factory sprung up under private soctor has opened the door to a new foreign exchange earner. The unit, located in the industrial suburb of Gummidipoondi, 48 km. from Madras on the Grand Northern Trunk Road, is manufacturing specialised granite products. The Sharon Granite factory has a total covered area of 16,000 sq.ft. and is ideally set in four acres. The unit is functioning from 12 December 1990 and is making Japanese round lanterns which are an essential accessory for Tomb stones. The raw material for round lanterns is waste granite-blocks. The Unit has been functioning with the technical guidance from a private entrepreneur (Seoul, Korea) and is a 100 per cent export oriented industry to Japan. The main feature of this project is that all the machines are indigenous. It is a highly labour intensive unit and has employed about 200 workers. The total annual foreigh exchange earning is Rs. 2 crores. The unit has also started production of other accessories of tomb stone, like Range[74].

Carborundum Universal Limited

Carborundum Universal Limited, a private concern, has established a medium scale industry at Thiruvothiyur in the year 1954. This industry is engaged in the manufacture of Coated Abrasives, Bonded Abrasives, Super Refractories, Aluminium oxide Granis, Synthetic Fused Refractcry Grains, calcined Bauxite/Malochite, Electrocast Refractories, Silicon carbide Grains, Raw Bauxite and Industrial ceramics. The paid up share capital of the industry at the time of inception was Rs. 50 lakh which increased to Rs. 2.01 crores in the year 1970. Further due to its spectacular growth, the share capital of the industry doubled in 1983 and in 1990, the industry witnessed a tremendous growth and the share capital touched a new hight of Rs. 8.35 crore in the year 1991.

Welfare Measures

The industry has introduced several welfare measures to the employees, workers and they include medical and first aid, uniforms, canteen facilities, leave fare assistance, educational allowance, training for employees scholarships to employees children, conveyance allowance welfare fund for employees, interest subsidy and cash award for family planning.

Medical and First Aid

A fully equipped ambulance room is functioning round the clock to treat the employees. In addition to First Aid to accident cases, oral medicines for light ailment are also provided to the employees. Medical check up is taken periodically to care for employees working in hazards. A sum up to Rs.240/- on the medical expenses is reimbursed to the exempted employees (not covered by E.S.I.). Health Insurance Scheme is in force for self as well as spouse of the employees for hospitalisation up to a sum of Rs. 13,500/- each. In the premium payable for the above Health Insurance Seheme, 75 per cent of the premium is borne by the employer.

Uniform

Employees are provided three sets of terecotton uniform per year. They are also granted monthly washing allowance of Rs.15/- each. Two turky towels are distributed to them per year. One pair of shoe with socks and required number of Hamam soaps are given to the employees every year.

Educational Allowance

A sum of Rs. 700/- per annum is given for all employees as Education allowance. The training department identifies the training needs for the development of employees and the management reimburses the cost of text book, notes, fee, paid to the institution for continuing higher education by employees for self professional, technical and academic. Scholarships are given to the children of the employees on merit basis to pursue higher education above +1 level from the management family trust.

Conveyance Allowance and Welfare Fund

Conveyance allowance of Rs.16/- per mensum is given to the employees. Company runs staff buses on nominal charges to benefit the employees, residing at various localities in the city[75]. A fund has been constituted for the welfare of the employees. The fund is managed by the management and office bearers of the employees' union.

ANNEXURE - 1

Capacities, Production, Turnover and Stock - 1990-91

	Unit	Licensed capacity as at 31.3.91.	Installed capacity as at 31.3.91.	Acutal production	Commencing stock	Closing stock	Turnover Quantity	Turnover Value Rs.
Coated Abrasives	Ream	1,50,000	1,50,000	51,204	91,185	7,183	53,206	12,91,10,812
		(1,50,000)	(1,50,000)	(30,555)	(9,198)	9,185	30,568	(6,62,88,699)
Bonded Abrasivss	Tonne	6,012	6,012	5,437	647	513	5,571	47,11,60,539
		(6,012)	(6,012)	(3,498)	570	(647)	(3,421)	(25,92,76,229)
Super Refractories	Tonne	3,262	1,860	3,331	35	87	2,960	9,83,55,156
		(3,262)	(1,860)	(1,650)	(34)	(35)	(1,565)	(5,28,54,118)
Aluminium Oxide	Tonne	11,792	10,000	6,637	586	1,075	2,074	3,55,06,663
Grains		(11,792)	(10,000)	(3,917)	(632)	(586)	(1,467)	(2,16,91,829)
Synthetic Fused	Tonne	3,500		2,586	190	244	1,640	2,01,57,171
Refractory Grains		(3,500)		(1,424)	(77)	(190)	(939)	(1,21,93,079)
Calcined Bauxite/	Tonne	-	30,000	23,076	4,400	2,494	4,193	73,24,618
Malochits		-	(30,000)	(13,890)	(1,366)	(4,400)	(6,452)	(68,61,000)
Electrocast	Tonne	3,000	2,000	784	23	69	738	5,91,12,990
Refractories		(3,000)	(2,000)	(715)	(59)	(23)	(751)	(5,81,76,073)
Silicon Carbide	M.Tonne	5,000	3,500	2,225	147	313	997	3,20,13,464
Grains		(5,000)	(3,500)	(1,692)	(94)	(147)	(1,037)	(2,67,42,234)
Raw Bauxite								1,69,710
								(73,884)
Industrial	M.T.	500	500	2.24	-	-	2.24	2,22,539
Ceramics		(-)	(-)	(-)	(-)	(-)	(-)	
								85,31,33,662
								(50,41,57,100)

Industrial Development Corporations in the State

Tamil Nadu is rapidly emerging as one of the most industrialised States of the country. It has been very successful in attracting foreign direct investment in many industrial activities.

Tamil Nadu is the most preferred investment destination in the country. To regain the glory of Tamil Nadu in the industrial front the Tamil Nadu Goverrnment are taking various steps to faster it by offering incentives, strengthening of the power generation capacity and the transmission and distribution arrangements, improving road network, bringing in the most technologically advanced Telecom facilities, opening new ports and developing the existing ports, strengthening of technical training facilities and speeding up the broadgauge conversion of rail lines. Government would follow industry friendly policies that decisions would be fast and that strengthening of infrastructure would be the area of extreme focus.

To accelerate the industrial development in Tamil Nadu, Government have set up various Industrial Corporations such as the State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT); Tamil Nadu Industrial Development Corporation Limited (TIDCO); The Tamil Nadu Industrial Investment Corporation Limited (TIIC); The Tamil Nadu Small Industries Development Corporation Limited (TANSIDCO) and Tamil Nadu Small Industries Corporation Limited (TANSI). These corporations play a catalytic role in the promotion of major, medium and small scale industries in the state. They identify and utilise the local resources available and there by widen the scope of industrial activity. They provide financial assistance for setting up new industries and for the expansion, diversification, renovation and modernisation of existing industries. The objectives, activities and achievements of various Industrial Development Corporations in the district are narrated below:

State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT)

The State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT) wholly owned by the Government of Tamil Nadu was set up in 1971 as a public limited company with the specific objective of playing a catalytic role in the promotion and development of medium and major industries and to hasten the industrial dispersal in backward and underdeveloped areas of the state. The corporation commenced its operation in January 1972 with a comprehensive promotional programme designed to stimulate entrepreneurship. Ever since its establishment SIPCOT is playing its role in the promotion and development of medium and major industries in Tamil Nadu. The role of the SIPCOT is mainly to plan, promote and develop medium and major industries and its promotional activities comprise the llows: 1. Provision of financial assistance to medium and major industries

under IDBI Refinance Scheme; 2. Implementation of a package of incentives for the development of Industries; 3. Development of potential growth centres and provision of developed lands at reasonable cost; and, 4. Provision of various ancillary and escort services for the entrepreneurs. Financial assistance by SIPCOT for medium and major industries is in the form of (1) Term loan under IDBI's Refinance Scheme and (2) seed capital under IDBI Seed Capital Scheme. These two schemes are discussed below[76]:

Term Loan under IDBI Refinance Scheme

SIPCOT extends assistance in respect of new units and also for expansion/diversification/modernisation/balancing equipments of the existing industrial under takings in Tamil Nadu by way of rupee term loan and also foreign exchange loan, solely and also jointly with the Tamil Nadu Industrial Investment Corporation Ltd. (TIIC) and/or banks. TIIC extends term loan assistance to small scale Industries while SIPCOT extends assistance to only medium and large scale industries. SIPCOT extends term loan only to proposals whose project cost is less than Rs. 3 crore. All projects costing more than Rs. 3 crore is financed by All India Financial Institutions and banks. The IDBI has given approval for SIPCOT for raising the sanction limit of term loan from Rs.90 lakh to Rs.150 lakh per project[77]. The details of sanction and disbursement of term loan by SIPCOT for the past 10 years from 1980-1990, are given in *Appendix - 12.*

Seed Capital Scheme

Promoters should be technically or professionally qualified or shall possess relevant experience or skill in industry, business or trade and should have the traits of the entrepreneurs for setting up and running the enterprise successfully. The followiing categories of entrepreneurs are eligible for seed capital assistance. 1. Intend to graduating from SSI to medium scale sector for the first time; 2. Intend to set up a project in the medium scale sector for the first time; 3. Already in medium scale sector and intend to undertake diversification for achieving better inability; and 4. Intend to take over an existing sick or closed unit, provided a proper scheme is drawn up to the satisfaction of financial institutions to establish inability of the unit in the hands of the new management. The project should be technically sound and economically viable and the project cost should not exceed Rs.3 crores. The seed capital assistance is in the form of equity share capital of the company or as soft loan carrying a service charge of one per cent per annum with an initial moratorium of five years. The quantum of assistance under the scheme is determined on the basis of the gap in the prescribed minimum promoters' contribution for the projects. The amount of seed capital assistance per project shall not exceed Rs.15 lakhs. The applications for seed capital assistance are examined by a Screening Committee constituted by IDBI.

New Package of Incentives

Interest Free Sales Tax Loan Scheme (IFST)

Existing industrial units (medium and large), undertaking substantial expansion/diversification, are eligible to get Interest Free Sales Tax loan, provided the increase in the quantity/value of production is not less than 25 per cent of its existing quantity/value of production. In case of units expanding/ diversifying in a different location, the minimum capital investment should be at least Rs.10 lakhs. The quantum of loan is equivalent to the tax paid by the existing unit during the preceding three years or 25 per cent of the value of fixed assets of the proposed scheme or Rs.50 lakhs whichever is least. In case of units which have earlier availed or IFST loan under this scheme, the quantum of loan is based on the Mother Unit concept. The loan is repayable in three equal annual instalments after the expiry of six years from the date of first disbursement. The loan is secured by first/second charge over the fixed assets of the assisted units in addition to the personal guarantee of two Directors/all partners.

Chengalpattu-MGR district is one of the industrially forward districts. However, there are certain pockets of backward areas which have potential for development. Financial incentives like Interest Free Sales Tax Loan and subsidy are given for growth of industries in the area. Large and Medium industrial units set up in Madurantakam, Cheyyur, Ponneri and Gummidipoondi taluks SIPCOT Industrial Complex at Gummidipoondi, Maraimalai Nagar Industrial complex and Kunnathur block are eligible for Interest Free Sales Tax Loan. The details of sanction and disbursement under IFST by SIPCOT for past 10 years (1980-1990) are given in *Appendix-13.*

State Investment Subsidy Scheme

Under this scheme, Madurantakam, Ponneri, Gummidipoondi and Cheyyur taluks are notified as backward taluks and consequently, they are eligible for State Subsidy equivalent to 15 per cent of the fixed capital investment or Rs.15 lakhs, whichever is less.

Subsidy scheme for selected categories of Industries

In order to encourage certain specified categories of Industries, the Government of Tamil Nadu have a special scheme to grant subsidy for selected categories of industries. The Jute processing industry set up in Chengalpattu taluk not covered by the state or central capital subsidy scheme to get a subsidy of 10 per cent on the value of the fixed assets to be created or at the rate of Rs.20,000/- per every regularly employed worker whichever is lower with an overall monetary ceiling of Rs.10 lakhs. Details of sanction and disbursement under State Capital Subsidy Scheme including Special Subsidy scheme for the past 10 years (1980-1990) are given in *Appendix-14.*

Concession in Water Royalties

New industries set up in Maraimalai Nagar and Kunnathur block are permitted to draw water from public sources on payment of fixed amount of Rs.200/- per annum as Water Royalty, irrespective of the quantity of water drawn for an initial period of six years.

Growth Centre, Gummidipoondi

To give a powerful thrust to the dispersal of industries in backward areas, the financial incentives are supplemented by a programme for converting backward areas into developing areas. The Government of Tamilnadu have worked out a strategy for the development of backward areas. The essential features of this strategy are selection of growth centres which have potential for development, provision of all infrastructural facilities in these centres, and promoting projects to ensure that the growth centres attain the stage of self sustaining growth in the least possible time in pursuance of the strategy. SIPCOT has taken up the development of a number of potential growth centres in the State and Gummidipoondi is one among them. An Industrial complex was started by SIPCOT at Gummidipoondi in the year 1982. It is located at 45 km. from Madras on Madras-Nellore Highway. Madras-Calcutta broad gauge railway line abuts the border of the complex. This is a fast developing area in industrial and housing spheres. The Madras Metropolitan Development Authority has identified this as a satellite town to relieve the housing congestion in Madras city. The total extent of Gummidipoondi complex is 801-38 acres, of which 157.86 acres were earmarked for infrastructure and 25.52 acres for amenities. Of the remaining 618 acres, 422 acres were already allotted to 138 units. Of these, 59 units commenced commercial production and 45 were in various stages of construction.[78] SIPCOT has assisted 118 project in the Chengalpattu-MGR district by way of term loan aggregating to Rs.60 crores up to 1988.

Du Pont Nylon Plant, Gummidipoondi*

Du Pont, one of the reputed chemical industries of American Company, has set up their Nylon-6 Unit at Gummidipoondi. SIPCOT Complex, for the manufacture of industrial yarn and fabric. Du Pont Nylons were granted Environmental clearance by Tamil Nadu Government in September 1995. The State Pollution Control Board gave them consent to establish their unit in October 1995. The unit has installed full scale waste water and air treatment plants, for both domestic and trade waste. This plant is to manufacture 6500 tonnes per annum of industrial nylon for use in tyre from the Nylon 6, 6 plant. The plant was commissioned on 11 December 1997 with an investment of about Rs.300 crores in the first phase. Du Pont are leaving no stand unturned in maintaining zero emission and have set high environmental standards in

* *Tamil Arasu,* December 1997

this plant. The plant produces an ingredient for stronger and durable automobile and aircraft tyres. It brings the technology and expertise of Nylon 6, 6 tyre cord fabric.

SIPCOT Complex, Irungattukottai

The SIPCOT Industrial complex at Irungattukottai near Sriperumpudur is located in an area of 1750 acres of land on the Chennai-Bangalore National Highways and develop it into an Industrial Complex for Automobile Engineering and Auto-component industries. M/s. Hyundai India Ltd., a wholly owned subsidiary of Hyundai Motor Company from South Korea has established their passenger car manufacturing plant in a 540 acre plot.

Other new industrial complexes are at Thiruperumpudur, Sunkuvar Chatram and near Singaperumalkoil. Apart from M/s. Mahindra Ford and Hyundai, Mitsubishi of Japan has set up a car plant to manufacture their Lancer model. Major foreign industrial groups like Matsushita industries and Fujikara of Japan, Kumtio Tyres of Korea, Iveco of Italy in association with Ashok Leyland have also signed up with Tamil Nadu.

A Petrochem Part over a 7000 acre area near Ennore is to be developed by TIDCO. This complex will have a tank terminal which can store the imported petroleum products.

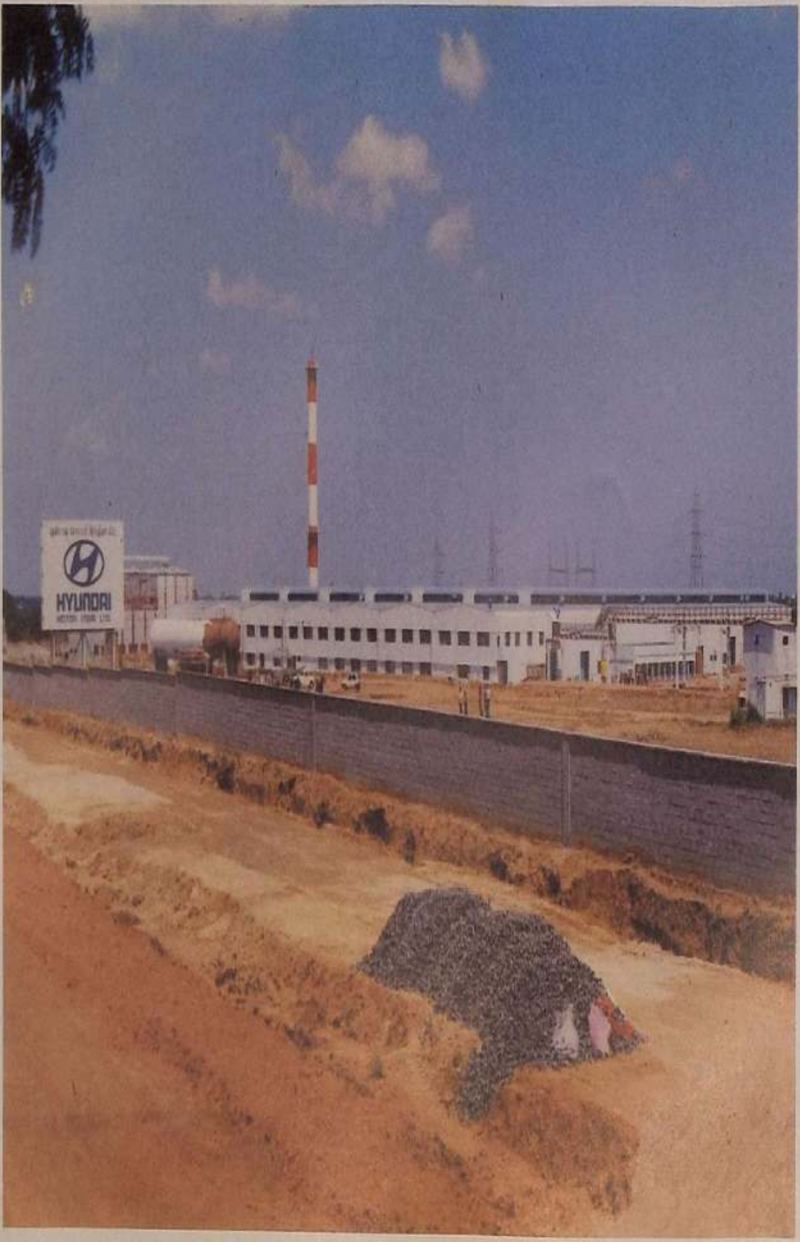
A new Satellite Port at Ennore

A satellite port is coming up at Ennore about 20 km. north of Chennai for handling coal meant for the North Chennai Thermal Power Project. The estimated cost of the project if Rs.593.90 crores with a foreign exchange component of Rs.307.58 crores. This Asian Development Bank has agreed to provide a loan for Rs.450.45 crores. The remaining amount be funded by Chennai Port Trust. The project was conceived following a study conducted by M/s. RITES, a Government of India undertaking, which recommended rail-*cum*-sea mode as the least cost mode of transport for bringing coal from Kalinja mines, Talcher to the North Chennai Thermal Power Project at Ennore. The main works involved are construction of two new berths for handling coal vessels upto 65000 DWT size, capital dredging of approach channels and harbour basin, construction of breakwaters, groynes, on-shore Civil works, utilities and amenities, procurement of floating crafts, navigational aids, etc.

Tamil Nadu Industrial Development Corporation Limited (TIDCO)

Tamil Nadu Industrial Development Corporation Limited (TIDCO) was incorporated in 1965. In 1970, the Government of India evolved the concept of the joint sector. Later, the Government of Tamil Nadu entrusted the implementation of joint sector concent to TIDCO. After this, TIDCO began

* *Tamil Arasu,* March 1997



Hyundai Car Company, Sriperumpudur

setting up joint sector ventures. The joint sector concept seeks to synthesize the initiative and the enterprise of the private sector with the support of the public sector to achieve the objectives of industrialisation of the state. The medium and large scale industries with outlay exceeding Rs.5 crore are taken up under joint sector. The contribution of TIDCO in the equity share capital in 26 per cent, private promoter 25 per cent and the remaining 49 per cent is offered to public[79]. With a view to widen the activities and sponsor more number of projects, TIDCO has taken up for implementation the concept of associate sector with reduced equity participation of 11 per cent by TIDCO. In such projects, equity participation by the private promoter will be 40 per cent while the public will subscribe 49 per cent. Day-to-day administration in joint or associate venture companies is vested with the private promoter. The participation of TIDCO is through the Board of Directors and sub-committees. TIDCO is endeavouring its best for even dispersal of industries throughout the state for ensuring balanced growth. The location of the industries is chosen based on factors, such as availability of raw materials, infrastructural facilities, proximity to the market, etc., with an overall view on the techno-economic viability. TIDCO has sponsored 15 industries in the Chengalpattu-MGR district involving a total outlay of Rs.496 crore till 1992. These units which are under production under implementation have created direct employment to about 4145 persons. Names of industries sponsored by TIDCO in the Chengalpattu-MGR district is tabled in *Appendix-15.*

The Tamil Nadu Industrial Investment Corporation Limited (TIIC)

The Tamil Nadu Industrial Investment Corporation Limited is the first State Level Industrial Development Institution. The corporation was set up in 1949 under the Companies Act to establish develop and accelerate industrial development in the state. It provides financial assistance to small and medium scale industrial units for the creation of fixed assets. TIIC grants financial assistance not only for setting up of new units but also for the expansion, diversification, renovation and modernisation of existing industrial units. It sanctions loans ranging from Rs.25,000/- to Rs.90 lakh for each industrial unit. TIIC has been playing a significant role in the industrial development of the state. It has been to a larger extent responsible for promoting many industries like textiles, chemicals, food, paper, metal products, leather and leather goods, non-metallic mineral products, etc[80].

Special Schemes

TIIC also sanctions financial assistance under the following special schemes for the promotion of certain segments deserving encouragement.

Soft Loan / Seed Capital Schemes

In order to encourage the first generation entrepreneurs and technically qualified persons and also persons who have acquired expertise in certain industrial fields activities and who do not have the adequate financial resources of their own to bring in the stipulated capital, the corporation gives financial assistance at a nominal rate of interest of one per cent under the scheme to supplement the required capital for their projects. The maximum amount which the corporation sanctions under this scheme of Rs.4.00 lakhs or 10 per cent of the cost of the project whichever is lower. Amounts above Rs.4.00 lakhs up to a maximum of Rs.15.00 lakhs are considered under the Seed Capital Scheme through the Industrial Development Bank of India.

Modernisation Scheme

The corporation provides assistance on soft terms to industries existing for more than five years to adopt improved and updated technology and methods of production to prevent mechanical and technological obsolescence of machines which are in use for more than five years. Proposals are considered if benefits are to accrue by way of reduction in unit cost of production, technological improvement, improved productivity in quality and quantity, better profitability, etc.

Medical Sector

Industrial Development Bank of India has recognised medical services as a service industry and loans are granted for creation of medical facilities under various schemes as detailed below : Registered Medical Practitioners are granted loans at 15 per cent promoters' contribution subject to a maximum loan amount of Rs.5.00 lakhs for construction of nursing home and purchase of medical equipments in rural areas *i.e.* other than corporation limits and first grade municipalities. Loans are also granted for purchase of electro medical equipments and for locating these clinics anywhere in Tamil Nadu including in metropolitan cities. If the investment in the electro medical equipments does not exceed Rs.60.00 lakhs, a debt-equity ratio of 3:1 and for in investment above Rs.60.00 lakhs a debt-equity ratio of 2:1 are stipulated. Non-medical people can also avail assistance under this scheme and they shall be agreeable to appoint a qualified medical persons to man the units. Under the IDBI's scheme for construction of nursing home, financial assistance up to Rs.90.00 lakhs can be considered for construction of nursing home including for the purchase of electro medical equipments in all areas including corporation limits on debt-equity ratio of 2:1. The minimum bed strength under the scheme shall be 20. Even non-medical people can avail assistance under the scheme subject to appoint the qualified post-graduate doctors for running the nursing homes. If the cost of the scheme does not exceed Rs.45 lakhs, it can be considered on a debt-equity ratio of 3:1.

Equipment Refinance Scheme

If the unit is a well established one with good working results and having good reputation, and is in urgent need of funds for the purchase of equipments, indigenous or imported, term loans can be obtained quickly from TIIC within 30 days. For eligibility, the concern should have been in operation for at least four years and should have earned profits and/or declared dividend on equity shares during the preceding two financial years and it should not be in default to any institution or bank.

Under Composite Loan Scheme, loan assistance up to Rs.50,000/- per unit is extended for purchase of fixed assets and working capital requirements to artisans, villages and cottage industries and small scale sectors in the tiny sector at a reduced margin and at a concessional rate of interest.

Under Concessional assistance to Ex-servicemen scheme, loan assistance is sanctioned to co-operatives/companies promoted by ex-servicemen on reduced promoters contribution of 10 per cent for loans up to Rs.15.00 lakhs.

Under Loan scheme for quality control scheme, loan assistance up to Rs.7.5 lakhs per project for acquisition of equipment for quality control is considered.

Research and Development

Enterprising entrepreneurs may have many new ideas and they may like to set up pilot scale plant or fabricated phototypes for converting ideas into realities. Others who have also made pilot scale or phototypes may like to implement commercial scale operations. Entrepreneurs who engage themselves in the above activities can avail finance under the Research and Development Scheme.

Hotel Scheme

Hotel industry has been introduced as a service industry and financial assistance are sanctioned for setting up both lodging and boarding facilities. Norms applicable to the medium scale industries are applicable to the hotel industry, if the project cost.

Women Entrepreneur Scheme

In order to encourage women to start industries financial assistance are granted to women entrepreneurs on concessional terms. Under Mahila Udayam Nidhi Scheme for women entrepreneurs, projects whose cost does not exceed Rs.10 lakhs and promoted by the women who qualify under the scheme will be eligible for lower promoters' contribution.

Subsidy Agency

TIIC acts as an agency for the Government of Tamil Nadu for getting subsidies given for locations, product, etc., for SSI Units. This arrangements make all the facilities available under the same roof.

Rehabilitation Assistance to Sick units

The corporation has set up a separate department in order to rehabilitate the deserving units which have become sick due to various reasons. This department diagnosis the causes for the sickness of the industrial/units and suggests various remedial measures including sanction of additional loans if necessary in order to revive the deserving sick units which have reasonable chances of revival based on examination of viability.

Recovery of Loans

The corporation has made commendable progress in the spheres of sanction and disbursement in the previous years and has laid special emphasis on the other important aspect *viz.*, recovery of loans. These funds are required for rotation to provide assistance to the needy industrial units besides the other sources of fund such as Share Capital, Bonds, IDBI, SIDBI refinance etc., raised by the corporation. In order to alleviate the genuine difficulties of defaulting industrial units, the corporation considers on merits revision of repayment schedules, waiver of penal interest and granting of moratorium etc. Where there is no chance of revival of units, the corporation as a last resort is constrained to take legal steps to recover the dues to the corporation. Number of industrial units benefited and amount sanctioned by the Tamil Nadu Industrial Investment Corporation Limited between 1974-75 and 1991-92 are tabled in *Appendix-16.*

Tamil Nadu Small Industries Corporation (TANSI)

The unique organisation of its kind in the country, Tamil Nadu Small Industries Corporation popularly known as 'TANSI' has made rapid strides in the field of industries power, communication and agriculture. It is one of the pioneering public sector undertakings of the Government of Tamil Nadu. Established in the year 1965, TANSI has in its fold, 47 production units manufacturing a variety of industrial and consumer products and 6 sales centres spread over in the districts and the city of Madras[81]. The production units of TANSI are engaged in the manufacture of multifarious products and services as listed out below :

Production include 1. Heavy and light structurals; 2. Steel and wooden furniture; 3. Tower components for H.T. Transmission lines, microwave, towers etc.; 4. Manufacture of machine tools power ghanis; 5. Cast iron pipes and specials; and 6. French polish and allied products. Services include 1. Design and fabrication of tools, jigs and fixtures; 2. Hot dip galvanizing; 3. Sheet metal work; 4. Assembly of wrist watches; and 5. Deepwell hand

pumps and spares. Consumer products such as steel and wooden furniture are sold direct from the producing units concerned and also from the sales centres situated in Madras, Madurai, Coimbatore, Tirunelveli, Tiruchirappalli and Kumbakonam. TANSI has set up two Engineering units, one at Sembarambakkam and the other at Tirupachur and the other industrial units such as machine shop, polish unit, pump unit and one project cell at Ambattur Industrial Estate, besides one subsidiary company of TANSI in the name of Tamil Nadu Paints and Allied Products Limited (TAPAD) in the district[82].

TANSI Engineering Works, Sembarambakkam

This Engineering Unit was set up in the year 1965 in an area of 5 acres. Light engineering and structural items are manufactured in the unit. The finished products are supplied to the offices of all government departments, public sector undertakings, local bodies located in Madras city and Chengalpattu-MGR district. The capital investment at the time of inception was Rs.2.58 lakh and in 1991-92, it was Rs.22.07 lakh. The total number of persons employed during the 1965 was 15 and it rose to 43 in the year 1991-92.

TANSI Engineering Works, Tirupachur

The engineering unit is located in an extent of 4.87 acres. Five industrial sheds have been erected and steel structurals are manufactured to the extent of 275 to 300 M.T., valued at Rs.41 lakh per annum. The entire share capital is owned by Government of Tami Nadu. A part of the working capital of the unit, is arranged by TANSI from out of the loans and advances secured from Commercial banks. The finished products are supplied to the government departments, co-operative institutions, public sector undertakings, *viz.*, TANFED, T.M.P.C.F. (AAVIN), TNEB, TWAD, T.N.C.S.C., M.M.W.S.S.B., T.N.H.B. AND T.N.S.C.B. The total capital investment during the period from 1974 to 1979 was Rs.5.20 lakh and it decreased to Rs.5 lakh from 1980 to 1983. Between the years 1984 and 1988, it was Rs.4.80 lakh and in 1991-92, it is Rs.8.67 lakh. The unit provides employment to 34 persons[83].

TANSI Machine Shop, Ambattur

This unit was originally set up as a tool room on 1 March 1965 and subsequently converted as Machine Shop. It undertakes orders from HVF, Avadi and other defence departments. The capital investment of the unit is Rs.43.23 lakh and it presently provides employment to 41 employees in all.

TANSI Polish Unit, Ambattur

This unit was started in December, 1976 at the instance of government to prevent misuse of spirit by spurious manufacturers. This unit manufactures spirit based products such as French Polish, Picture Varnish, Gasket Shellack, M.C. Lacquer and Thinner, Flexographic Ink and bottling of denature spirit and cater to the needs of the Printing Industries in the state. Recently, it has

developed LYSOL which is widely used in medical institutions. This industrial unit functions in the Industrial Estate at Ambattur and it has its own sales outlets at Sivakasi to market its products exclusively. The capital investment of this unit is Rs.124.09 lakhs. It provides employment to 38 persons in all and runs in profit right from its inception.

TANSI Pump Unit, Ambattur

A unit at Ambattur Industrial Estate was established during April 1983 exclusively for the production of India Mark - II Deep well Hand Pumps. These Hand Pumps are supplied to the TWAD Board, Slum Clearance Board, Panchayat Unions, Madras Metropolitan Water Supply and Sewerage Board to tide over the drought conditions in Tamil Nadu. This unit is also supplying spare parts to the above departments for maintenance of hand pumps. This unit has also exported India Mark-III Hand Pumps through UNICEF (Deemed Export). It provides employment to 26 persons.

TANSIProject Cell, Ambattur

TANSI has set up a Project Cell in 1986 at Ambattur to undertake major Structural Projects in various places of Tamil Nadu. It undertakes the works relating to construction of sugar mills to TASCO, Oil storage tanks to Indian Oil Corporation Flood Light Towers to International Airport Authority of India Limited, Tower Testing Station to SERC, Factory buildings, various structural materials to Southern Railway and OHE structures for Metropolitan Project, Madras. It provides employment to 15 persons.

Tamil Nadu Paints and Allied Products Limited (TAPAP)

This is a subsidiary company of Tansi which was formed in the year 1985. It commenced production with effect from 1 April 1986 at its factory at Industrial Estate, Ambattur. This company is manufacturing red Oxide paint, paint for road marking and enamel paint, etc. These paints are used by Tansi in its products and are also sold to other Organisations like Police Department, Corporation of Madras, Tamil Nadu Civil Supplies Corporation Ltd., Public Works Department, H & R.W. departments and other central/ state government departments as well as general public. The entire share capital is owned by TANSI and the company provides employment to 15 persons.

Tamil Nadu Agro Industries Corporation Limited

The Tamil Nadu Agro Industries Corporation encourages industries which help the growth and modernisation of Agriculture, Animal Husbandry, Pisciculture and Poultry farming. The Corporation encourages food processing industries also. It has set up Pesticides project and Fishnet Project in the district[64].

Pesticides Project

In 1972, the corporation took up the formulation of popular pesticides, important among them being BHC 10 per cent, an Endrin 20 per cent E.C. To begin with, these formulations were carried out in private formulators' Units making use of their spare capacities. The corporation later set up a plant of its own at SIDCO Industrial Estate, Ambattur, at a capital cost of Rs.9.79 lakhs. This plant went into commercial production from September 1976. It provides employment to 29 persons. Raw materials such as steatite, BHC, Endosulfan, Butchlor Tech., Phosphamidon, Monocrotophos, Malathion Tech., Quinalphos Tech. Cyclobexanone, Kerosene and Aromax are used for manufacture of pesticides. To meet the expected heavy demand, a second mill has been erected at a cost of Rs.4 lakhs. Quality pesticides manufactured by the corporation to I.S.I. standards are sold to the public by the Regional Centres and sales outlets of the corporation and by the Directorate of Agriculture which sells pesticides through its depots. The Tamil Nadu Agro Industries Corporation renders services to the farmers by way of supplying agricultural inputs like fertilizers and pesticides besides supplying agricultural tractors, power trillers and their accessories and agricultural machineries such as thrashers, sprayers, pipes and fittings, pumps, etc.

Small Scale Industries

The economic development of a district depends on the development of its industries. The programme of planned development of small scale industries in Tamil Nadu has been an integral part of the process rapid industrialisation of the state. With a view to accelerating this process, the government have evolved a wide array of measures and among these, the systematic efforts taken by them for promoting the growth of small scale industries have been the most significant. The programmes for the development of small scale industries were launched at the beginning of the Second Five Year Plan[85]. These programmes assumed definite dimensions by the beginning of the Third Plan. From them, the foundations for the development of small scale industries in the country have been well laid. Small Scale Industries facilitate peaceful and concurrent socio-economic development of all classes of people by creating a large number of entrepreneurs.

The principal needs of the small scale industries are training, and technical advice in the use of improved tools and machines and in the adoption of new techniques, supply of raw materials and power at reasonable rates, grant of financial and on easy terms, extension of assistance in the marketing of finished products and provision of ready-made factory, space and servicing facilities. To fulfil these needs the Government of Tamil Nadu implement several schemes such as Tool Room shops, Common Service facility workshop, pilot production centres, training and demonstration centres, social

welfare schemes, Sales depots, Raw Materials Depot, Industrial Co-operatives and Industrial Estates and colonies[86].

The number of registered small scale units increased considerably during the years 1967 and 1970. As on 30 June 1967, the number of S.S.I. units was 1007 and it increased to 1777 on 30 June 1970. The share in the plant and machinery in the Chengalpattu-MGR district was 24.25 per cent. The total number of S.S.I. registered units during the years ending on 31 March, 1987, 1988 and 1989 were 7719, 8797 and 9781 respectively[87].

Rice Mills

Paddy is the principal crop of the district, which is cultivated in large areas. Agro-processing units like rice mills are distributed in all blocks. There are about 1557 rice mills spread over the entire district. There are more rice mills *viz.*, 210 in Madurantakam block, 126 in Uthiramerur block, 104 in Poonamallee, 98 in Puzhal, 86 in Kancheepuram, 85 in Walajabad, 79 in Kundrathur, 69 in Thirukalikundram, 66 in Minjur, 65 in Poondi and so on. R.K. Pet and Pallipat blocks have lesser number of rice mills, *viz.*, 12 and 19 respectively. 'Ponni' paddy cultivated in the Karunguzhi areas in Madurantakam block is a popular variety which commands very good market in the district and also in Madras City. Red Hills, a town in Puzhal block, is a busy paddy and rice marketing centre and Alandur is also a rice marketing centre. Many rice mills have only conventional method of rice hulling operations. In order to increase the quantity of rice manufacture to meet out the demands, modernisation of rice mills by erecting good brand huller and hulled-*cum*-sheller has been undertaken from the year 1980. The central and state governments provide assistance of an equal share for modernisation of rice mills.

Details of the number of modern and cooly rice mills, Panchayat Union-wise, are shown in *Appendix-17.*

Fishing Industry

There are five industries connected with fisheries and four boat building yards in the district. They are engaged in the manufacture of marine products[88]. The Fishing Industries are :

1. M/s. Asian Marine Products (P) Limited, East Coast Road, Enjambakkam. 2. M/s. Cochin Seafoods, MGR Road, Palavakkam. 3. M/s. Devi Marine Food Exports (P) Limited, Muttukadu Road, Neelankarai. 4. M/s. Marks Marine and Plastic (P) Limited, Ennore Coastal High Road, Kaladipet and 5. Tamil Nadu Fisheries Development Corporation Freezing Plant, Ennore.

Boat building yards are :

1. Indian Crafts, Ennore Coastal Road, Thiruvothiyur. 2. Pandyan Boat Builders, Neelankarai. 3. Acquamarine, B5, Ambattur Industrial Estate. 4. Varuna Constructions, P.147, Ambattur Industrial Estate.

Tamil Nadu Small Industries Development Corporation Limited (TANSIDCO)

The Tamil Nadu Small Industries Development Corporation Limited (TANSIDCO), an enterprise of the Government of Tamil Nadu, was set up in the year 1970 as a Private Limited Company and it was later converted into a Public Limited Company in 1971 with the main objective of developing and assisting, the Small Scale industries in the state. The authorised share capital of the corporation in Rs.25 crores. The paid up share capital, as on 31 March 1990 is Rs.655 lakhs.

Schemes under implementation by SIDCO are as follows-

i. Provision of infrastructural facilities to Small Scale Industries, which include industrial worksheds and developed plots in Industrial Estates as well as built up sheds for Tiny Sector Industries; ii. Distribution of Key raw materials to Small Scale industries; and iii. Marketing Assistance for small scale Industries.

Infrastructural Facilities

One of the major activities of SIDCO is the formation of Industrial Estates. Wherever, Industrial potential as well as the demand for Industrial Worksheds are felt, SIDCO either acquires lands or take over Government lands ranging from a minimum of five acres to a maximum 200 acres, constructs sheds of various sizes and allots them to the needy entrepreneurs with viable projects. In the Estates developed by SIDCO, all the infrastructural facilities like roads, water supply, drainage, power, etc., are provided. To undertake construction programmes in various locations, SIDCO mobilises funds both from its internal resources and also by availing itself of term loan facilities from SIPCOT, etc., under the IDBI Refinance Scheme[89]. The sheds constructed by SIDCO are allotted to small scale entrepreneurs on Outright Purchase Basis in the areas where there are heavy demand. Sheds are also allotted under Hire Purchase Basis where the demand is not so much. The entrepreneurs normally obtain term loan assistance from the Financial Institutions like the TIIC and banks to pay the shed cost in full to SIDCO and for the purchase of machineries required for the project as well. This helps the entrepreneurs to get all assistance from one institution.

SIDCO has set up industrial estates at Alathur, Ambattur, Kanchee-puram, Kakkalur and Kodungaiyur. In all the Industrial Estates developed by SIDCO, there is no difficulty in getting power connection. Water is also provided as per the norms prescribed by the company. Most of the large, medium and small scale industries in the district are concentrated in the belt areas of Madras city, *viz.*, Puzhal, St. Thomas Mount and Villivakkam blocks of Saidapet taluk, which have all infrastructural facilities like power, labour and marketing potentials[90]. Out of 290 medium and large scale industries,

189 are located in all these three blocks. Out of 8830 small scale industries about 6516 are located in Saidapet taluk.

In the medium and large scale sector, manufacture of engineering goods tops the list with 150 units, followed by chemical products with 58 units. Other important units are textiles, leather, and electrical, numbering seven, 20 and 32 respectively. In the small scale sector, engineering products top the list with 3336 units followed by non-metallic mineral products with 970 and food products with 678 units. Other important categories are non-metallic mineral products such as stone crushing, bricks and cement products which account for 970 units. Total number of units producing rubber and plastic products in 549 while the units for Chemical Products account for 966. Important small scale industrial co-operative societies manufacturing various products are also functioning in the district[91]. Types of industries are as follows :

1. T.V. Receivers, Knitted Woolen socks and Raincoats at Avadi; 2. Leather products at Kolur *(via)* Ponneri; 3. Brass Metal Works and Printing at Kancheepuram; 4. Liquid soap at Pallikaranai; 5. Coir products at Sadras; 6. Envelope making at Uthukottai; and 7. Poly Woven Socks at Pakkam near Acharapakkam. An Export Free Zone Industrial Estate (Madras Export Processing Zone) has also been developed at Tambaram in Saidapet taluk for manufacturing products exclusively for exports. The district's share of output to total output in Major Industry groups for the years 1985-86 and the number of Small Scale industries and number of persons employed for the years 1986-87, 1987-88 and 1988-89 are table in *Appendix-18*[92].

Cottage Industries

Handloom weaving, tailoring, carpentry, footwear, laundry, bakery, agarbathies and pappads manufacturing are some of the important cottage industries in the district. They are mainly concentrated in Pothatturpet, Mathur, R.K. Pet, Ammayarkuppam, Pallipet and Venanur of Tiruttani and Pallipet taluks. As on 31 March 1988, 433 industries had been registered as cottage industries[93]. Total employment generated was 1732 then with a fixed investment of Rs.65 lakh. As on 31 March 1991, 1500 industries have been registered and the total employment generated is 7270, with a fixed investment of Rs.125 lakh.

Co-operatives play a vital role in the economic regeneration of our country through expansion and development of cottage industries particularly handloom weaving, Palmgur manufacturing, etc. So far as handloom industry is concerned, liberal provision has been made for securing the admission into societies of large number of weavers by the grant of loans for taking share capital, provision of working capital, supply of appliances free or at concessional rates, opening of depots, an emporia, payment of rebate to consumers on their purchases, etc[94]. Regarding palmgur industry, provision

has been made for popularising the adoption of improved methods of manufacture and encouragement of ancillary industries.

Tamil Nadu Khadi and Village Industries

The progamme of Khadi and Village Industries started at the All-India level in pursuance of the decision taken in the All India Congress Committee in 1922, was taken up in Tamil Nadu as part of the Swadeshi Movement. The Government of Tamil Nadu initiated the programme of Khadi in 1947 as Firka Development Programme[95]. A separate department was created in 1956 with a view to bestow more attention to the scheme. It was in 1960 that the State Board, a statutory organisation was formed by an Act of Legislature.

Through the board, it is envisaged to provide employment opportunities to the rural artisans, to utilise the idle man-power available in the form of under-employment in the rural areas, to put local raw materials like non-edible oil seeds, waste paper, banian cutting, etc., to better use by converting them into utility articles and to promote the feeling of self-reliance and self sufficiency in the minds of rural folk. Thus, the programme of Khadi not only tries to produce the cloth required for public consumption but also carries the practical philosophy that nothing goes waste. Tamil Nadu has been the first and foremost in the field of development of Khadi and Village industries by undertaking directly the trading activities besides implementing the programme on department basis.

The important Khadi and Village industries in the district include khadi products, hand made paper, soap, footwear, etc. The office of the Assistant Director of Khadi and Village industries is functioning at Kancheepuram from 15 August 1966. Schemes implemented by the Tamil Nadu Khadi and Village Industries Board are mainly employment oriented under the various Government Schemes, *viz.*, Integrated Rural Development Programme, Cluster Development Programme and Special Component Plan[96].

Khadi

There are 14 rural textile centres (RTCs) in the district. Of these, five RTCs located at Mullipakkam, Agragharam, Nan Mangalam, Nazarathpet, Paranur have six spindles each and they provide employment to about 150 persons. The rural textile centres at Kadapakkam, Somapattu, Anna Nagar, Koranjur, Neithavoyal and Perumbakkam are functioning under special schemes which provide employment to about 180 persons. The RTC at Mambakkam was started on 14 September 1983 and Nan Mangalam on 20 February 1986. There are two Nepali loom centres one at Neithavoyal employing 11 persons and the other at Reddipalayam providing employment to 25 persons. There are 10 Khadi Krafts in the district, marketing the Khadi and Village Industries products. The location of these Khadi Krafts and the dates of inception are given below :

Sl.no.	Location of Khadi Kraft	Date of inception
1.	Kancheepuram	26 March 1958
2.	Chengalpattu	30 September 1959
3.	Tiruvallur	28 February 1961
4.	Tambaram	30 September 1961
5.	Ponneri	21 October 1961
6.	Tirumerumandur	7 November 1961
7.	Thiruvothiyur	9 February 1962
8.	Thirukalikundram	3 September 1962
9.	Tiruttani	1 September 1963
10.	Madurantakam	25 September 1963

The total turn over of the products of khadi and village industries from the ten Khadi Krafts referred to, for the years 1986-87 to 1990-91 is tabled below[97]:

Sl.no	Year	Sale proceeds of the products Khadi	Village industries.
1.	2.	3.	4.
		(Rs. in lakhs)	(Rs. in lakhs)
1.	1986-87	67.00	18.10
2.	1987-88	70.08	20.50
3.	1988-89	94.75	22.10
4.	1989-90	110.00	23.20
5.	1990-91	117.80	26.10

District Khadi Godown at Kancheepuram

There is a khadi godown at Kancheepuram, It is engaged in buying and storing khadi and village industries products. It supplies the products to all the 10 Khadi Krafts, according to their requirements. The Khadi Krafts are, however, not allowed to buy products direct from other districts.

Village Industries

Handmade paper units, pottery units, soap units and footwear units are the important village industries in the district. There are two hand made paper units in the district one at Mamandur which provides employment to 26 persons while the other at Veeraragavapuram has employed 22 persons. There is a glazed pottery unit at Sevvapettai in Tiruvallur taluk and a Regional Pottery Training Centre is also functioning here.

Glazed pottery Unit, Sevvapettai

Originally, it was started as a Model Training-*cum*-production centre by the Panchayat Union at Ekkadu in 1958 and it was placed under the supervisory control of the Extension Officer (Industries) attached to the panchayat union. In the year 1967, the unit was brought under the direct control of the Tamil Nadu Khadi and Village Industries Board and it has later been converted as a production centre.

Regional Pottery Training Centre, Sevvapettai

The Regional pottery Training centre was started in the year 1961 with full aid from Khadi and Village Industries Commission, Bombay[98]. The centre imparts training to the village pottery artisans in all items of pottery works such as Red Pottery, Bricks, Tiles, Flooring Tiles (weathering tiles) and some simple glazed wares. This Master Pottery Training Course is for a period of five months and 25 persons are given training in a batch. Two batches are conducted in a year. A sum of Rs. 350/- is paid as stipend per trainee per month. The age limit for joining the course is 18 years and the maximum age limit is 35 years. The minimum educational qualification for the potter is 5th Standard while for Non-potter it is 8th Standard. Training is given to artisans hailing from 4 states only *viz.*, Tamil Nadu, Andhra Pradesh, Kerala and Pondicherry. It is funded by the Khadi and Village Industries Commission, Bombay and the scheme is executed by the Tamil Nadu Khadi and Village Industries Board. There are two soap units in the district, one at Arambakkam and another at Poondi.

Foot wear Unit

Two footwear units are established, one at Kancheepuram employing 18 persons and another at Pammal employing 12 persons. Achievements of the village industrial units during the year 1990-91 (up to March 1991) are shown in *Appendix-19.* Particulars of the khadi and village Industrial cooperative societies in the district, dates of establishment, membership and capital investment are tabled in *Appendix-20.* Production and sale of products of the Khadi and Village Industrial cooperative societies, for the years 1988-89 to 1990-91 are detailed in *Appendix-21.*

Rural Industries Project Programme

The primary objective of the Rural Industries Project Programme is to bring about a cooperative agro-industrial economy, by an all-round development of agriculture, irrigation, communications, industries, social services, etc., and by stimulation and mobilisation of the initiative and efforts of local residents to the fullest extent[99]. In other words, the programme is to develop small scale, cottage and village industries in the rural areas excluding towns having more than 15,000 population. Under this programme, General Purpose Engineering Workshops, Common Facility Service Centres, Training

centres and Departmental production units have been started according to the availability of raw materials and other things in the project areas. A scheme for the intensive development of small industries in rural areas, as Pilot Projects in 40 selected areas in the whole of India, was proposed by the Rural Industries Planning Committee of the Planning Commission. Out of which, three were allotted to the Tamil Nadu State during the year 1962-63 including Sriperumbudur Rural Industries Project in the Chengalpattu-MGR district, comprising Sriperumbudur and Tiruvallur taluks.

The Rural Industries Project, a centrally sponsored scheme was started functioning in the year 1962-63. The scheme was implemented in the whole of Tiruvallur taluk for intensive development of small industries in rural areas. The entrepreneurs who started industries in this project area got loans from the project funds at three per cent interest per annum. The State Bank of India has provided liberalised credit facility from 1969 onwards without insisting on immovable properties as securities. The scarce raw materials are supplied on priority basis. Different industries have been started in the district. The SBI has provided loans to all these industies from 1969 onwards. Several persons have been given training in industries like mat weaving, palm leaf products making, galvanizing, turning, welding, fruit preservation, radio-craftsmanship, etc., to shape them self-employed during of - season. More than 100 persons have been trained in general mechanism in the general purpose engineering workshop started at Tirupatchur as a departmental unit. It manufactures agricultural and poultry equipments[100]. Common facility centre to help the rural artisans and agriculturists has been started at Ikkadu in carpentry, blacksmithy, turning and welding. An envelop making unit and a footwear unit are functioning at Uthukottai. To help the artisans in the project area, an industrial estate has been established at Kakkalur near Tiruvallur.

Central Palmgur and Palm Products Institute, Madhavaram Milk colony

Palm family is an important family in its usefulness to man. It supplies food, shelter, clothing, timber, building materials, fibre, paper starch, palm sugar, palm oil, wax and dyes. Palm industry provides employment opportunities to the rural people especially the weaker sections of the society, and at the same time, a good number of utility products are made. This industry has been trying to find a place for itself in the national industrial map.

The Khadi and Village Industries Commission, a statutory body of the Government of India, is planning, organising and implementing various programmes for the development of Village Industries and Khadi. The Khadi and Village Industries Commission, has established an All India Central Institute at Madhavaram Milk colony in August 1974. The institute imparts training to selected persons on various palm products manufacturing such

as palm leaf garlands, boxes, purses, mats, baskets, etc. The important activities of the Institute are as under:

i. In the interest of the development of palmgur industry, experiments and field trials are conducted. They are supported with laboratory control for tackling problems of technical nature in the interest of development programme; ii. Introduction of improved tools and implements and also processing techniques at selected products to demonstrate their importance and effect to the producer, extension activities covering field studies on the cost structure of various products in different parts, organising extension and publicity work, giving on the spot guidance with respect to manufacturing processes of the palm products, training, etc., to the implementing agencies in the field, as per their requests; iii. This is an All India Institute for the palmgur industry, imparting specialised high grade training to the important aspects of the palmgur and products industry and also regular long term and short term courses. It operates a model trading unit with a view to establish the viability of the techniques evolved for introducing in the field. The institute imparts one long term course and three short term courses.

Palm Products Technology

Palm Products Technology course is a long term course. The duration of the training is eight months. The minimum educational qualification is a pass in Plus Two and above. Candidates sponsored by the State Khadi and Village Industries Boards/ State/ District Palmgur Federation, other voluntary organisations are admitted for the training courses. The total strength of students per batch is 10. The non-residential students get Rs. 300/- p.m. and the residential students get Rs.400/- p.m. as stipend[101].

The three short term courses are Palm leaf/Neer/Eark articles making courses, Confectionary and Indigenous Sweet Making Course and Palm Fibre extraction and Brush Making Course having a duration of three months each. They are artisan courses. The intake capacity in each course is 10. Stipend for residential students is Rs. 400/- p.m. and for non-residential students, it is Rs.300/- p.m. A pass in the X has been prescribed for Confectionary and Indigenous Sweet Making Course and for other two courses VIII Standard is the qualification for admission.

Palmgur Industry

The palm tree was known to man as a source of sweetening agent since time immemorial. Palmgur industry is the major industry among the village industries functioning under the control of Tamil Nadu Khadi and Village Industries Board. The products derived from the palmgur area of edible consisting of neera (pathaneer), palm jaggery, palm sugar, palm candy, palm confectionary, palm canning and under non-edible items consisting of leaf and naar, brushes, building rafters, etc. There are 23.56 lakh palmyrah trees in the district during 1990-91 providing employment to 39,000 people[102].

Out of these trees, 11 lakh are male, 3.91 lakhs are female and 8.65 lakhs are pre-bearing trees[103] (vadali panai).

The palmyrah season is as follows :

1.	Neera season	-	January to May
2.	Nungu season (Tender palmyrah fruit)	-	May to August
3.	Palmyrah fruit	-	September to October
4.	Palmyrah tubers	-	December to January
5.	Palmyrah fibre	-	April to June
6.	Processed palm leaf thatches	-	February to March

Organisation

At the state level, the State Palmgur and Fibre Marketing Co-operative Federation is the apex body. The Chengalpattu-MGR District Palmgur and Fibre Marketing Co-operative Federation is functioning from 12 April 1968[104]. There are 92 primary palmgur and palm products co-operative societies functioning in the district. Each one is interlinked in the matter of finance, production, marketing, technical guidance, etc. The State Federation takes care of the primary societies in production and marketing of products. The objects of the organisations are planning, implementation of schemes, imparting training, co-ordinating the work of primary societies, organising model production and demonstrations in the latest improvements and techniques. They run sales emporia, look after marketing and advance loans and grants. They strive for the improvement of the industry and also to uplift the socio-economic conditions of artisans engaged in the industry.

Kumarappapuram Palm Project, in Madhavaram is functioning from 15 June 1963 and Palm Fibre Procurement Centre from 19 April 1968. Raw fibre available in Kadappakkam, Kottaikkadu, Othiyur, Kolathur and their surrounding areas is procured and refined. There is a Palm Fibre Training Centre at Vedanthangal in Madurantakam taluk.

Palm Project, Kumarappapuram at Madhavaram

Sugar yielding palms are the foundation stone for the existence and progress of the palmgur and other palm products in the industry. Palmgur and palm products industry creates more productive employment in rural areas. Tamil Nadu is one of the States endowed with rich growth of palm trees.

The Palm Project, Kumarappapuram, near Madhavaram Milk Colony was started on 15 June 1963 to exploit the palm wealth available and also to provide employment opportunities to the people hailing from the lowest strata of the society. The palm project is functioning under the control of the Tamil

Nadu State Palmgur and Fibre Marketing Co-operative Federation. The palm complex consists of neera tapping, manufacture of bread and allied products, confectionary making, palm sugar manufacturing, brush making, fancy palm leaf and near articles making, etc.

Under this project, there are 9729 palm trees for tapping neera during season. The neera season normally commences in January-February every year. About 32 tappers are engaged for tapping neera. They have been provided with thatched houses for stay during the season. The earning of each tapper is about Rs.25/- per day. The project provides direct employment to 327 artisans and indirect employment to 185 artisans.

Workshed Method

In order to give continuous employment under workshed method, especially to rural womenfolk, palm leaf, palm naar, palm confectionary, bread and biscuits manufacture sectors are functioning in the complex. Various products manufactured in the complex are marketed through the network of marketting outlets functioning under the control of the State Federation and the Tamil Nadu Khadi and Village Board.

Neera

Out of the targeted neera of 4.50 lakh during the season, about one lakh litres of neera were sold in the marketing outlets in attractive containers and the balance of 3.50 lakh litres of neera was converted into subsidiary products.

Supply of Cocobrooms and baskets to government offices

The palm complex is enjoying the climate of supplying the coco-brooms and the data palm baskets to the Corporation of Madras. Drivers' seats are manufactured and supplied to various transport corporations every year.

Neera Unit

Neera season is from Feburary to June and about 9729 palm trees are used for exploitation and it provided employment to 37 tappers. An estimated quantity of four lakh litres are extracted during neera season every year and 2 lakh litres of neera are marketed through its outlets. The quantity of neera container is 220 ml. The quantity of neera used for subsidiary products was two lakh litres. Subsidiary products such as palm syrub, palm jaggery, palm sugar, palm candy, palm confectionary and palm biscuits are manufactured in the palm complex.

Naar Unit

The naar unit was commissioned in the year 1964. It provides employment to 17 artisans. The unit produces naar to the value of Rs. 2 lakh. The products manufactured in the unit are baskets, driver seats, cots, shaping leafs, decorative pieces.

Palm Leaf Unit

The palm leaf unit was commissioned in the year 1965 and about 20 artisans are working here. Products manufactured in the unit are fancy articles, trays, leaf boxes, hand bags, sitting mats, sweet boxes, winnowing fans. Products worth Rs.3 lakhs are made every year.

Brush Making Unit

The brush making unit was commissioned in the year 1964. It provides employment to 24 artisans. Sanitary brushes, industrial brushes, domestic brushes, sweeping broom, lavatory cleaning brushes, etc., are made in the unit. Materials worth Rs.4.20 lakhs are Produced every year. Brushes are made both manually and also by machines. Machines used in brush making are bank saw machine, circular saw machine, fret work machine, thickoners planner, drilling machine, wood turning lathe, sheering machine, grinding machine, *semi*-automatic brush, filling machine, trimming machine. The main customers for the finished products and Corporation of Madras, municipalities, panchayat unions, transport corporations and textile mills.

Confectionary Unit

The unit was commissioned in the year 1965, and about seven artisans are working here. Chocolate, ginger toffe and milk chocolate are manufactured. The equipments and tools used for manufacturing sweets are hot plates, culter, grinder, kneading machine, and confectionary. Products to the value of Rs.1.20 lakhs are manufactured per annum.

Fruit Canning

The fruit canning unit was commissioned in the year 1964. Products namely apple jam, mixed jam and synthetic syrup are manufactured in the unit. Besides this, nungu is also preserved. Seven artisans are working in the unit.

Palm Candy and palm sugar plant

The palm candy unit was commissioned in the year 1964. It provides employment to 10 artisans and materials to the value of Rs.1 lakh are produced per annum. The palm sugar plant was commissioned in the year 1964 and about 40 persons are working in the unit. Products to the value of Rs. 4 lakhs are manufactured per year. The capacity of the plant is 1.00 Metric tonne. The sugar produced here is used for manufacturing aerated beverages, palmta, palmcola, sarbath, confectionary, biscuits and canning. The date palm basket unit was commissioned in the year 1975 and it provides employment to 240 artisans. Goods such as sanitary baskets, sweeping broom, leaf mat etc., are manufactured and the total value of production per annum is Rs.4 lakhs[105].

Kadapakkam

The Tamil Nadu State Palmgur and Fibre Marketing Co-operative Federation has established a palm complex at Kadapakkam village in Cheyyur taluk in the year 1960[106]. A palm sugar plant with daily production capacity of 0.33 tonne has been functioning. The other units functioning in the complex are fibre sizing unit, palm leaf unit and palm naar unit. The neera collected in the area are marketed in Madras City. Pazhaverkkadu, a coastal village in Ponneri taluk is famous for manufacturing export quality palm leaf articles. Artisans especially womenfolk are engaged in this work.

Handloom Industry

The handloom industry had a glorious past. It is a traditional and labour intensive industry. References to cloth in the Ramayana, Maha Bharatha, Vedas, Manusmrithi, Artha Sasthra, Amrakosa, etc., show the antiquity of the industry[107]. Our ancients had reached a high degree of perfection in the weaving of cotton cloth as revealed by the Mohanjodara and Harappa excavations. The handloom industry in India is one of very remote antiquity and its products have been always wonderful things of beauty. The fineness of the Indian handloom fabric had been the wonder of the Westerners and they were ranked as highest works of art[108]. Within the economic structure of the state as well as the Nation, handloom forms an important limb. The handloom industry had grown steadily all the years and this is the premier cottage industry of our country, next to agriculture, it provides the largest employment opportunities to the people[109]. It provides roughly one-third of the clothing requirements of the country and contributes considerably towards self-sufficiency in clothing. The industry is well-established particularly in rural areas.

Supply of yarn is an important requisite in the handloom industry. The Cooperative Movement was started primarily to relieve rural indebtedness. To provide continuous work and regular wages to weavers cooperative societies for weavers have been set up. Cooperative spinning mills have also been started, to ensure adequate supply of yarn to the cooperatives at affordable prices and industrial societies are set up for loomless weavers. The first cooperative society for weavers in Tamil Nadu was established in Kancheepuram in 1905[110]. More cooperative societies were later established. The number of looms as per Statistical Atlas during 1900-01 was 11,225 and the number of weavers as per census during that period was 13664. The number of handlooms as per handloom census in 1921 was 10600 and number of weavers as per decennial census in 1921 was 5593[111]. This shows that there was no relationship between the number of weavers and the number of looms. The number of looms in the cooperative sector on 30 June 1961 in the district was 19,159 and the quantity of handloom cloth produced in 1960-61 was 30,81,539 yards[112].

Handlooms Units

The number of handloom units in 1970 was 43284 and the number of units increased to 45952 in 1980. In the year 1990, 45789 units were functioning. The number of units under cooperative fold during the years 1970, 1980 and 1990 were 10,321, 19,256 and 23,009 respectively. There were 74 primary weavers' cooperative societies in 1970 and the number of societies increased to 89 in 1980 and 165 in 1990. Number of handloom weavers' cooperative societies as on 1 January 1992 is 172. The average production per loom per annum (yards, in 1960-61 in the district was 160.8. Details of number of looms in Chengalpattu-MGR District in Census years[113] (1921-1951) are tabled below :

Year	*No. of looms.*
1921	10,600
1931	10,600
1941	16,600
1947	31,868
1951	61,782

Number of looms in the years 1921 and 1931 remained constant, *i.e.* 10,600 and in 1941 the number increased to 16,600. It was 31,865 and 61,782 in 1947 and 1951 respectively. The estimate of handlooms (including silk and art silk) in 1954 was 46,200 and it increased to 59,973 in 1955. Number of cotton looms registered under the Cotton Textiles (Production by Handloom) Control Order, 1956 during 1957 was 34,648 and it was 45,902 in 1961. While a loom can be installed or dismantled easily, it is always difficult to assess the number of looms with certainty.

In Census Year, 1961, the number of throw shuttle pit looms, fly shuttle pit looms and other types (mainly frame looms) was 345, 52097 and 154 respectively. When handloom industry had no competition from mills, there was one handloom for every 100 persons in the state. On the basis of the population of Madras State in 1961 which was 3,36,86,953, there was a loom for every 67 persons. Similarly, for the population of 21,96,412 of Chengalpattu district in 1961, there was a loom for every 42 persons[114]. Thus, the District average was lesser than the State average. Under active looms in the district, the number of dependent weavers was 532, 62 were independent weavers and 84 were members of cooperatives. Under idle looms, there were 90 dependent weavers, 14 independent weavers and 12 members of cooperatives. The total number of looms was 794. The percentage of idle looms to total looms was 14.8 and the percentage of idle looms as per university survey was 4.0. The percentage of idle looms increased from 4.0 to 14.8 in the Chengalpattu-MGR district. This was mainly attributed to the fall in the export of handloom cloth. The main variety of cloth

produced of handlooms was lungi which was meant for export. The export of handloom cloth fell in 1960. Apparently, the exporters who provided employment to the looms in the district reduced their production in view of the fall in exports.

The Department of Handlooms and Textiles with headquarters in Madras, is the apex body for the development of handlooms, powerlooms and textiles in the state. Kancheepuram circle comprises of Madras and Chengalpattu-MGR districts. In the Chengalpattu-MGR district, Kancheepuram has the heaviest concentration of handlooms consisting of both silk and cotton looms. Kancheepuram silk sarees have a far reaching fame since Vijayanagar empire. Kancheepuram silk sarees are bound up in Indian marriage among the rich and the poor. The dhoties and lungies produced in the district are unique. The lungies are popular for their district fondly worn colour combination and texture command good market especially adored by the peoples of Pakistan, Burma, Myanmar, Sri Lanka and Singapore[115].

Powerloom concentration is quite meagre in the district compared to Salem, Coimbatore and Erode areas. Up to 1980, there were about 22,700 looms covered by 111 weavers' cooperative societies in the district. As per 1987 Handloom Census, there were 45,789 looms, comprising 33783 cotton looms and 12006 silk looms. Of these, 17958 looms have been covered by 165 weavers' cooperative societies comprising 137 cotton, 20 silk and eight industrial weavers' cooperative societies. These weavers' cooperative societies have produced 129.83 lakh metres handloom cloth value to Rs.7287.91 lakhs as on 31 March 1990. Out of 33783 cotton looms, 13552 are under cooperative fold[116]. Of the 12,006 silk looms, 10,067 looms are under cooperative fold in the 20 silk weavers' cooperative societies in Kancheepuram town, providing employment to more than 30,201 silk weavers. The silk industry in the cooperative sector in Kancheepuram is in need of about 11500 kg. of raw silk and about 8000 marcs of Zari per month. The silk weavers in the cooperative sector are getting continuous employment with reasonable wages. The quantum of wages earned by a weaver per month depends upon the type design he is weaving. Normally, a silk weaver earns about Rs.600/- to Rs.1100/- per month. A cotton weaver in the cooperative sector earns monthly wage at Rs.450/- to Rs.600/-

The average monthly yarn requirement of the weavers' cooperative societies in Kancheepuram circle is shown below :

20s	-	80	bundles
26s	-	600	bundles
40s	-	1600	bundles
60s K	-	5200	bundles
60s C	-	1650	bundles

80s K	-	1250	bundles
80s C	-	1100	bundles
80s (Special)	-	100	bundles
2/17s B	-	50	bundles

Generally, the weavers' cooperative societies purchase cotton yarn from the cooptex yarn units situated in Kancheepuram and Madras. The cotton weaver cooperative societies are permitted to purchase cotton yarn from the cooperative spinning mills on receipt of the 'no stock certificate' from the respective cooptex yarn units.

Varieties Produced

The following varieties of handloom cloth are produced in Kancheepuram circle and handkerchiefs and dress materials are also woven here.

Silk : Plain pieces

Korvai saree varieties, Tissue saree varieties, Jacquard saree varieties and Pavadai varieties

Cotton

60s x 40s lunghies, 80s x 80s lunghies, 60s x 60s sarees, 40s x 40s dhothies and 40s x 40s colour gada,

Janatha

26s x 26s - (colour gada) 26s - (sarees), 40s x 40s - (lunghies), 40s x 40s - (sarees) and 40s x 40s - (colour gada)

Production

The average monthly production of silk fabrics (Kancheepuram types) in the district is about 0.72 lakh metres worth Rs.301.29 lakhs. Similarly, the cotton weavers' cooperative societies in Kancheepuram circle are producing about 9.27 lakhs metres worth Rs.297.67 lakhs.

Year-wise Production of handloom cloth from 1980 to 1990 [117]:

Year	*Quantity in lakh* (Metres)	*Value in lakhs* Rs.
1	2	3
1980	52.69	827.56
1981	60.78	1099.78
1982	89.68	1444.07
1983	93.47	1772.04
1984	150.90	2369.50

1985	127.95	2519.01
1986	200.66	2622.34
1987	201.43	2714.71
1988	270.02	3297.62
1989	278.37	4276.17
1990	289.01	5068.05

Marketing

The Silk Weavers' Cooperative societies in Kancheepuram normally market their products locally and through sales depots. Most of the societies are having their own sales depots in Mysore, Bangalore, Tumkur, Vijayawada, Hindupur, Salem, Erode, Coimbatore and Madurai. They are also supplying their goods to cooptex.

The monthly average sales of fabrics in Kancheepuram is about 0.69 lakh metres worth Rs.304.25 lakhs. During festivals, monthly sales record more. The Primary Cotton Weavers Cooperative societies mainly depend upon the Cooptex to dispose their products. Their production is made according to the needs of the Cooptex. Most of the cotton varieties are sold in large quantities during the festival season. To boost up the sales, government allow rebate subsidy during the festival seasons.

Year-wise details on sale of handloom cloth from 1980 to 1990:

Year	*Quantity in lakh* (metres)	Value (Rs. in lakhs)
1980	62.18	1046.39
1981	73.08	1241.72
1982	88.70	1775.15
1983	89.87	1987.27
1984	144.68	1929.78
1985	165.74	2330.91
1986	185.03	2797.00
1987	194.10	3775.32
1988	202.35	4271.38
1989	223.74	4839.75
1990	232.64	4966.00

Powerloom Units

The number of power loom units in the years 1970, 1980 and 1990 were 254,697 and 2417 respectively. Taluk-wise particulars on the powerloom units are tabled below[118]:

Sl. no.	Name of the Taluk	No.of units	Authorised looms	Unauthorised looms.	Total
1	2	3	4	5	6
1.	Uthiramerur	1	1	-	1
2.	Kancheepuram	14	50	3	53
3.	Gummidipoondi	5	113	18	131
4.	Tiruttani	132	328	95	423
5.	Pallipet	796	1097	691	1788
6.	Uthukottai	1	10	-	10
7.	Sriperumbudur	1	1	-	1
8.	Tiruvallur	2	10	-	10
	Total	952	1610	807	2417

Industrial Weavers' Cooperative Societies

There are eight Industrial Weavers' Cooperative societies functioning in the district providing employment to 250 loomless weavers. The object of these Industrial weavers' Cooperative societies, is to provide continuous employment to poor loomless weavers under one roof.

Government Financial Assistance to Weavers' Cooperative Societies

During the year 1989-90, the Weavers' Cooperative societies in Kancheepuram circle have been provided with cash credit accommodation, amounting to Rs.1500 lakh and a sum of Rs.1.60 lakh was sanctioned as share capital loan during that period.

Co-operative Handloom Weavers' Savings and Security Scheme

Under the Cooperative Handloom Weavers' Savings and Security Scheme-*cum*-Group Insurance Scheme, the subscriber contributes 6 per cent of the wages earned by him to the scheme and a contribution of three per cent is made by the government. Interest at the rate of seven per cent is allowed on the balance outstanding. In the event of the death of an insured subscriber, the nominee of the deceased subscriber gets an insurance amount of Rs.3000/- besides the total savings in the fund, and also cooptex gives Rs.2000/- as contribution. The insurance amount has been increased from Rs. 3000/- to Rs. 10000/- from 1990-91 onwards. Besides this scheme, member also gets 3 per cent subsidy or maximum of Rs. 90/- from the central government. In Kancheepuram circle, 106 Weavers Cooperative societies have been brought under the Cooperative Savings and Security Scheme. About 11980 members are benefited by this benevolent scheme.

Rebate scheme

As an incentive to improve sales of handloom cloth produced in primary weavers' cooperative societies and in order to avoid the stagnation of the handloom goods in the weavers' cooperative societies, rebate subsidy is sanctioned in festival seasons like Pongal, Deepavali, etc., with a view to liquidate the stocks held by Weavers' Cooperative societies. The rebate allowed by these societies is re-imbursed by the government. This expenditure is met by the State and Central Governments in equal proportion. Under this scheme, the government sanctioned Rs.423.32 lakhs as rebate subsidy to the weavers' cooperative societies in Kancheepuram circle in the year 1989-90. A sum of Rs. 274.43 lakhs was due to the weavers' co-operative societies from the government as rebate subsidy.

Modernisation Scheme

In accordance with the Textile policy of the Government of India, the handloom industry adopts modern techniques of weaving to suit the fast changing fashion and consumer preferential markets for new handloom products. Under the Modernisation scheme, modernised looms, loom accessories, light, fan in the loom shed are supplied to the members of the cooperative societies in order to diversify the pattern of production and to increase productivity of the fast moving varieties by way of subsidy and loan. Under this scheme, a sum of Rs.4.69 lakhs was sanctioned during the year 1989-90.

Handloom weavers attached to the Serkadu Cotton Weavers' Co-operative Society in Wallajabad taluk of this district who had been weaving 'lungies' for the past 50 years or so, are switching over to silk weaving from the year 1995, due to a Decentralised Training Programme introduced by the Handloom Development Department, New Delhi under this programme, four months training is imparted to turn out silk sarees which will normally fetch them a monthly income of Rs.1,500 to Rs 2,000.

The main aim of the decentralised training programme is to uplift the economic status of the handloom weavers. During the training period, the weavers are paid a stipend of Rs. 350/- per month and after training their cotton weavers co-operative society be converted to a silk weavers co-operative society and be given all assistance to set up silk looms. Another objective of the Decentralised Training Programme is to give an impetus to the handloom weaving industry through improved techniquess and organised communication system for the percolation of new techniques to the rural weavers. Weavers, dyers and printers, etc., connected with the handloom industry would also be trained in the improved technologies. The Decentralised Training Programme would take the training programme right to the door step of the rural weavers. The programme was designed to cover 2,500 weavers in two years.

National Bank for Agriculture and Rural Development (NABARD)

The NABARD is rendering financial assistance for the promotion of handloom units in the district. The financial assistance given by the NABARD from the year 1980 to 1990 is given below[119]:

Sl.no.	*Year*	*Cash credit* (Rs. in lakhs)
1.	1980	514
2.	1981	652
3.	1982	729
4.	1983	845
5.	1984	957
6.	1985	1032
7.	1986	1154
8.	1987	1261
9.	1988	1327
10.	1989	1415
11.	1990	1500

Housing Scheme

The weavers housing scheme which was discontinued after 1962 has since been revived and a modified weavers housing scheme is implemented with financial assistance from HUDCO, under this scheme, the total cost of a house is Rs.15000/-. This includes loan of Rs.10000/- from HUDCO and subsidy from Central and state Governments @ Rs.2500/- each. The Kancheepuram Pallava Silk Weavers' Cooperative Society has constructed 64 houses during the year 1987-88 and handed them over to the allottees. In the year 1988-89, the following societies in Kancheepuram started construction of the houses as noted against each:-

i) Murugan Silk Weavers' Cooperative Society 250 ii) Arignar Anna Silk Weavers' Cooperative Society 202 iii) Sri Varadharajaswamy Silk Weavers' Cooperative Society 99 iv) Tiruvalluvar Silk Weavers' Cooperative Society 217.

The government have sanctioned a part as subsidy amounting to Rs. 37.90 lakh to this housing scheme. During the year 1989-90, housing schemes have been implemented by the Kancheepuram Murugan Silk Weavers' Cooperative Society and Varadarajaswamy Silk Weavers' Cooperative Society to construct 134 and 130 houses respectively. A sum of Rs. 13.20 lakhs has been disbursed to the societies, as subsidy.

Special Type of Cooperative Societies

There are two special type of cooperative societies to cater to the needs of silk weavers and small powerloom owners.

1. Kancheepuram Silk Twisting Industrial Cooperative Society; and 2. Tirukkalukundram Dr. Kalaignar Powerloom Weavers' Cooperative Society. The Kancheepuram Silk Twisting Cooperative Society caters to the needs of the silk weavers'cooperative societies in Kancheepuram area in silk twisting, while Tirukkalukundram Dr. Kalaignar Powerlooms Weavers' Cooperative Society looks after the welfare of the small powerloom owners living in the area of Thirukalikundram Panchayat Union. The list of other Handloom Weavers' Cooperative societies in the district is tabled in *Appendix-22.*

State Participation

To overcome the financial constraints in weavers cooperative societies, the government as a gesture of goodwill towards cooperatives have formulated the scheme of state participation in the share capital of weavers cooperative societies. The maximum amount that could be invested by government in a primary Weavers' Cooperative Society by way of state participation in the share capital is Rs.One lakh. The amount so sanctioned to weavers' cooperative societies has to be repatriated within a period of 15 years apart from apportionment of dividend into government account if dividend is declared by the society to which state participation in the share capital is sanctioned.

Scheme of Interest Subsidy

The prevailing bank rate of interest for finances made is 10 per cent. NABARD is financing the weavers' cooperative societies and cooptex at 21/2 per cent below the bank rate, *i.e.,* 71/2 per cent. The Tamil Nadu State Apex Cooperative Banks through which the above finances are channelised to primary weavers' cooperative societies and cooptex, are also providing funds at the same rate at which they borrow from NABARD[120]. In order to compensate the losses incurred by the banks in the lending rate, interest subsidy at the rate of 3 per cent to the District Central Co-operative Banks and at one per cent to the Tamil Nadu State Apex Co-operative Bank is provided by the State Government under the scheme of subsidy towards interest on working capital loans.

The Tamil Nadu Handloom Weavers' Co-operative Society Limited (COOPTEX)

The Tamil Nadu Handloom Weavers' Co-operative Society Limited, popularly known as 'Cooptex' is selling the handloom goods produced by the Primary Weavers' Co-operative societies through its selling units situated throughout India. Cooptex has been established as an apex level organisation

with prime objective of extending marketing support, namely to market the handloom goods produced by the primary weavers' cooperative societies which are affiliated to it and also to supply yarn to Primary Weavers' Cooperative societies through its yarn depots at reasonable prices. Chengalpattu-MGR district has more than 100 Primary Weavers' Cooperative societies which are engaged in the production of silk sarees, cotton sarees, dhothies, lunghies, towels, gada cloth and grey materials. The weavers of Chengalpattu-MGR district manufacture low cost varieties in cotton in 20s up to 60s which are mostly used by lower and middle class people.

As in 1991, there are 25 cooptex showrooms functioning in Chengalpattu - MGR district which are under the control of the Regional Offices, Vellore and Madras. There is a procurement office at Kancheepuram which guides the Primary Weavers' Cooperative societies in respect of handloom goods in designs and patterns for the material. The procurement office is managed by a Manager, an artist and some technical supervisors.[121] Number of cooptex showrooms in the district and particulars of their turnover from 1987-88 to 1989-90 are shown below[122]:

Sl.no.	*Year*	*No.of showrooms*	*Sales* (Rs.in lakhs)
1.	1987-88	23	189.16
2.	1988-89	22	248.79
3.	1989-90	24	822.85

Weavers' Housing Scheme in the district

Saidapet Weavers' Cooperative Society

The society has constructed 60 houses to their weaver members in the year 1959. The government have sanctioned Rs.2,47,500/- as loan and Rs. 72,000/- as subsidy for the construction of these houses. Rs. 3,926/- as loan and Rs.1,200/- as subsidy have been sanctioned for construction of each house. The houses have already been allotted to the weaver members. The society has also cleared the entire government loan.

Kancheepuram Kamakshiamman Silk Weavers' Cooperative Society

The society has constructed 70 houses to their weaver members in the year 1962 in the total area of 7.32 acres. The government have sanctioned Rs.2.17 lakhs as loan and 0.84 lakh as subsidy for the construction of these houses. Rs 2,400/- as loan and Rs.1,200/- as subsidy have been sanctioned for construction of each house[123]. The society has already cleared the government loan. The society has released the houses to 62 members.

Kancheepuram Pallava Silk Weavers' Cooperative Society

The society has constructed 64 houses in the total area of 4.26 acres in the year 1988. The HUDCO have sanctioned Rs. 6.02 lakhs as loan and

the Government of Tamil Nadu have sanctioned a sum of Rs. 3.20 lakhs as subsidy for the construction of the houses. The houses have been constructed and handed over to the weaver members.

Kancheepuram Arignar Anna Silk Weavers' Cooperative Society

The society has purchased 11.16 acres of land for the construction of houses to its 202 members. The HUDCO have sanctioned and released Rs.19.80 lakhs as loan. The Government of Tamil Nadu have sanctioned a sum of Rs. 10.10 lakh as subsidy.

Kancheepuram Sri Varadarajaswamy Silk Weavers' Cooperative Society

The society has purchased 11.64 acres of land for the construction of houses to 229 members of the society. Of these, the society has taken up construction of 99 houses in the year 1988-89 and the remaining 130 in 1989-90. The government have sanctioned a sum of Rs.0.95 lakh as subsidy for the construction of the houses.

Kancheepuram Murugan Silk weavers' Cooperative Society

The society has purchased 22.11 acres of land for the construction of houses to 384 members of the society. Of these, the society has taken up construction of 250 houses in the year 1988-89 and the remaining 134 in 1989-90. The government have sanctioned and released 12.50 lakhs as subsidy for the construction of the houses.

Kancheepuram Tiruvalluvar Silk Weavers' Cooperative Society

The society has purchased 13.78 acres of land for the construction of houses to 217 members of the society. The government have released Rs. 10.35 lakhs as subsidy for the construction of these houses.

Handloom Development Project

With the financial assistance from Government of India, the Government of Tamil Nadu have set up four cooperative intensive handloom development projects[124]. One such project is established at Kancheepuram and others are at Madurai, Salem and Erode.

The Kancheepuram Cooperative Intensive Handloom Development Project Limited

In pursuance of the recommendations of the High Power Study Team headed by Thiru B. Sivaraman, the Government of India introduced various schemes for the development of handloom industry[125]. In the sixth plan period, the Government of India, approved the scheme of formulating Intensive Handloom Projects and Export Production Projects.

Kancheepuram is a traditional handloom centre noted for its silk varieties. Besides the silk looms in Kancheepuram, there are cotton handlooms in a number of villages in the district producing exportable varieties

of shirtings, lunghies and handkerchiefs. Most of these looms were practically controlled by leading private exporters and master weavers. In order to bring these weavers within cooperative fold, it was proposed to set up an Intensive Handloom Development Project with headquarters at Kancheepuram to cover 5000 handlooms. Accordingly, a scheme was sent to Government of India for approval and for grant of financial assistance. The Government of India approved the scheme for implementation under the Twenty Point Economic programme and agreed to provide financial assistance, *viz.*, 50 per cent as loan and 25 per cent as grant during the first three years and 25 per cent as loan and 25 per cent as grant during the fourth and fifth years of the Sixth Plan period. The state government had to bear 25 per cent of the total cost during the first three years and 50 per cent during the fourth and fifth years. The Government of Tamil Nadu approved the scheme of setting up of Intensive Handloom Development project at Kancheepuram with 5000 looms and the scheme is implemented through the Tamil Nadu Handloom Finance and Trading Corporation. The Kancheepuram Intensive Handloom Development Project was started on 25 July 1976 as a unit of Handloom Finance and Trading Corporation, Madras.

In order to implement the various schemes effectively and to avail of government loans, subsidies, concessions, etc., and also the working capital loan under NABARD scheme, it was decided to bring the project under co-operative fold. Accordingly, Government of India approved the proposal for the conversion of the Intensive Handloom Development project, Kancheepuram into a co-operative project. Pursuant to this, the kancheepuram Co-operative Intensive Handloom Development Project was registered as a co-operative society under the Tamil Nadu Cooperative Societies Act, on 29 September 1979 and the cooperative project started functioning on 1 October 1979. The area of operation of the project is Chengalpattu-MGR, Sambuvarayar, North Arcot- Ambedkar and Madras districts. The main object of the project is to improve handloom industry and also the economic condition of the weavers residing in the area of operation of the project. In order to achieve the objective, the project undertakes the following measures. After admitting the weavers as members of the project, it supplies yarn and other raw materials required for production of clothes regularly. It establishes dye house for dyeing of yarn; and markets the entire production.

The total cost of project for the implementation of the scheme was Rs.79.45 lakhs, of which a sum of Rs.52.34 lakhs was sanctioned as loan and Rs.27.11 lakhs as subsidy. Government subsequently converted 50 per cent of loan and also interest and penal interest payable thereon by the project to the tune of Rs. 42.96 lakhs into equity. After the conversion of the project into cooperative project, working capital requirement is financed by the Kancheepuram Central Cooperative Bank Limited, under NABARD

scheme. A cash credit loan of Rs.80 lakhs was sanctioned for the year 1991-92 for the requirement of working capital. The project targeted to cover 5000 looms. Up to 1978-79, the project covered only 3685 handlooms. However, as on 31 March 1986, the target of 5000 looms was exceeded by covering 5518 looms. Subsequently, some of the members had withdrawn from the project. As on 30 June 1990, there were 4528 looms in the project[126].

The weaver members of the project are, however, living in different places in the area of operation of Chengalpattu-MGR, Sambuvarayar, North Arcot-Ambedkar and Madras districts. In order to ensure quick and easy supply of raw materials to the members, production sub-centres have been opened in the district at Pillaiyarpalayam, Tirumalpur, Ammaiyarkuppam, Panapakkam, Podatturpet, Thakkolam, Nemili, Arni, Melboothen and Anakaputhur. The project is producing lunghies, sarees, Kanchi cotton, korvai sarees, shirtings, kerchiefs, churidars, silk sarees and acrylic shawls. Janatha varieties of sarees, dhothies and lunghies are also manufactured to cater to the needs of middle and lower middle class people of the society.

Sales are effected through cooptex, selling agents and also retailers. For marketing the products of all cooperative handloom projects in Tamil Nadu, a Marketing Cell has been set up at Madras, a marketing manager is incharge of the cell. As a measure of intensive marketing selling agents have been appointed in selected places. To meet the requirements of dyed yarn, the project is running a dye house of its own. 110 bundles of yarn are dyed on an average per day. In order to ensure the production of quality fabrics, increasing production and improving productivity the projects have resorted to modernisation of looms periodically. A sum of Rs.1.55 lakh has been spent on modernisation. Orientation and refresher training and advanced training to weavers are also imparted. During the period of training, the trainees are paid stipend at Rs.200/- per month. So far 689 weavers have been given training and the expenditure incurred under the training scheme is Rs.1.40 lakh up to 1990-91.

Arts and Crafts

India, with a rich cultural heritage, is well known for her deep rooted tradition in arts and crafts. Sculpture has always occupied a place of pride in the arts and crafts of South India. Sculpturing, as an art form was taken to great heights by Tamils and the resuscitation of this art form, which has held the world in thrall for centuries. Many of the art forms were the result of deep spiritual experience. Mahabalipuram, not to speak of the innumerable rock cut temples, is standing monument of the skill and ingenuity of the South India sculptures, which is now creating sculptures to come. Patronised by kings, encouraged by the enlightened aristocracy and inspired by faith in a living religion, these craftsmen have done wonders, that have captured the attention of an admiring world from ancient times down to the present

day[127]. In the interest of preserving this ancient craft and providing trained workers, needed for renovation of temples and for other works of art, a Sculpture Training Centre, Mahabalipuram was established in the year 1957. Mahabalipuram was selected for locating the institution, as this place provides for the right atmosphere and background for the craft. The Sculpture Centre was upgraded in the year 1978 and named as Government College of Architecture and Sculpture and is under the administrative control of the Department of Technical Education. Trainings on stone carving, wood carving, stucco sculpture, metal sculpture and traditional painting (drawing on Temple Designing only) are imparted. (This has been dealt with in detail in the chapter on: EDUCATION. During the year 1986-87, the President of India awarded a Master Craftsman National Award for Stone carving to Thiru S.Neelamega Sthapathy, Mastercraftsman of Poompuhar Stone carving unit, Mahabalipuram[128].

Handicrafts

Handicrafts has always been a very basic activity of human society; for crafts are an integral part of our life. In fact, they are found to be more cohesive in human relationship than even language, and can cross such barriers as the latter may create.

Stone Sculpture

Stone Carving, as a basic art, has been blended with the Hindu culture. This craft is mainly concentrated in Mahabalipuram. Musical pillars, among others, are manufactured at the Sculpture Training Centre, *Mahabalipuram, against firm order.[129]

Bronze Icons

Bronze Icons are produced by cire perdue process (Lost Wax process). There are a few artisans of this craft in Kancheepuram.

Ball Metal Lamps

Perfect in their form and flawless in their technique, the ball metal lamps are traditionally known as 'Kuthuvilakkus' and are mostly used for religious and auspicious occasions. The new type of lamp known as Thonda Kuthuvilakku (Self-filling lamp) is an ideal substitute for candles used in dinners, - a new trend in the use of these traditional items in modern environments. This craft is concentrated in Kancheepuram.

Wood Carvings

The splendid specimens of wood carvings with their chiselled excellence are striking and convincing examples of the characteristics skills in delicate carvings. The craftsmen engaged in this craft are concentrated in Tirumazhisai.

* Mahabalipuram is known as Mamallapuram

Marketing

The Tamil Nadu Handicrafts Development Corporation, a Government owned public limited company was formed and registered under the Indian Companies Act on 26 July 1973. The corporation commenced business on 1 August 1973. The authorised share capital of the company was Rs.50 lakh. Initially, the corporation was engaged only in the marketing of handicrafts and then gradually it took over the production units run by the Industries Department and now it controls the complete range of activities from the procurement of raw materials to the marketing of their products.

The main objectives of the Tamil Nadu Handicrafts Development Corporation are[130]: 1. to develop and promote handicrafts in all respects; 2. to provide financial, technical, marketing, development or any other assistance and guidance to any establishment, undertaking or enterprise of any description whatsoever, which is likely to facilitate or accelerate the development of handicrafts; and; 3. to promote, establish and operate sales offices, such as emporia, showrooms, publicity offices, exhibitions, stall centres with the object of improving the marketability of handicrafts anywhere within and outside India.

The important handicrafts in the Changalpattu-MGR district are granite stone carving, soap stone carving, wood carving, metal sculptures, embroidery, cane and bamboo basket making, artistic mat weaving, weaving of artistic silk sarees, brass art ware, clay toy/ceramic, art pottery and paper toys[131]. The handicrafts units are mainly concentrated at Mamallapuram, Kancheepuram, Kattankulathur, Araneri, Palanallur, Ayyankarkulam and Panaiyur. As on 31 March 1988, 3241 industries had been registered with an employment potential of 8839 persons and total fixed investment on handicrafts units was Rs.486.20 lakhs. But as on 31 March 1991, 5019 industries have been registered with an employment potential of 13564 persons and the total fixed investment is Rs.715.50 lakhs.

The Tamil Nadu Handicrafts Development Corporation is running two production centres, namely, the Poompuhar Art and Bell Metal Centre at Kancheepuram and Poompuhar Stone Sculpture Centre at Mamallapuram[132]. A sales showroom at Mamallapuram is also run by this corporation. The artisans in these trades have also formed societies for their self-improvement and the societies are functioning well. There are three industrial cooperative societies, *viz.*, Pallavaram Carpentry and Blacksmithy Industrial Cooperative Society, Tirumazhisai Multi Purpose Cooperative Society and Tiruttani Timber Industrial Cooperative Society in the district[133].

SERICULTURE

Sericulture is an agro-based, labour intensive rural industry. It is a profitable industry that brings good remuneration throughout the year to the Sericulturists. This industry provides full time self employment to the family. Sericulture comprises three occupations, *viz.*, mulberry cultivation, silkworm rearing and silk reeling. Sericultural operations in the district are looked after by the Assistant Director of Sericulture at Kancheepuram, whose office is functioning from 17 July 1982. The following sericultural units[134] are in existence in the district: 1. Government Cocoon Market and-Reeling Unit at Kancheepuram; 2. Government Silk Farm at Vichanthangal near Kancheepuram; 3. Sericulture Extension-*cum*-Training Centre, Kancheepuram; 4.Sericulture Extension-*cum*-Training Centre, Tiruttani; and, 5. Government Silk Exchange, Kancheepuram.

Government Cocoon Market, Kancheepuram

Government Cocoon Market, at Kancheepuram provides assured marketing to all the farmers in and around this district. The market plays a major role in recovering bank loan dues from farmers.

Year	*Transacted Cocoons*
1983-84	06777.300
1984-85	04725.900
1985-86	05749.600
1986-87	09047.510
1987-88	00669.560
1988-89	04934.200
1989-90	03599.900
1990-91	16308.850
1991-92	16954.200
1992-93	24198.300
1993-94	20626.000

Government Silk Reeling Unit, Kancheepuram

Government silk reeling unit , Kancheepuram is to provide a security to the price of cocoons, beside providing employment to rural population. This unit also provides training in silk reeling.

*Details of silk production from 1982-83 to 1993-94 are tabled below**

Year	*Silk Production*
1982-83	364.100 kg.
1983-84	353.800 "
1984-85	321.200 "
1985-86	372.200 "
1986-87	322.750 "
1987-88	362.200 "
1988-89	371.900 "
1989-90	245.300 "
1990-91	452.700 "
1991-92	475.650 "
1992-93	569.700 "
1993-94	366.800 "

Tamil Nadu Government Anna Silk Exchange,Kancheepuram

Anna Silk Exchange was started on 9 January 1991. It provides open competitive market (auction) to sell produced silk in Tamil nadu. It is functioning three days per week in a alternative days commencing from Monday onwards.

During 1990-91, silk to be extent of 17620, 100 kg. to the tune of Rs.142.05 lakhs was transacted. Levy to the value of Rs.1.94 lakhs was collected during that period. In 1991-92 (upto March 1992), silk to the quantity of 143043300 kg. to the value of Rs.197.62 lakhs was transacted. The collection of levy during that period was Rs.20.17 lakhs.

* (The tables are based on the data provided by the Assistant Director of Sericulture, Kancheepuram, in his report dated 2 March 1995.)

Sericulture Extension-cum-*Training Centre*

There are two sericulture extension-*cum*-training centres in the district, one at Kancheepuram and the other at Tiruttani. These centres impart training to the sericulturists in silk-worm rearing.

A Government Silk farm is located in an area of 8.05 acres at Vitchanthagal near Kancheepuram. Here, mulberry is planted in an area of 4.00 acres. Cross breeding of cocoons and chawkie rearing is made on a scientific method. There are two technical service centres in this district, one at Tiruttani and another at Kancheepuram. They cover all the 27 blocks. The Technical Service Centres are playing vital role in mulberry expansion, supply of layings and to give new technical guidance so as to enable the farmers to improve their cultivation as well as the cocoon production. They

are also introducting Insurance schemes to farmers and new mulberry strains to popularise in this district.

Government Farm at Vitchanthangal

Government Silk Farm is situated 7 km away from this Silk city, Kancheepuram in Uttiramerur route at Vitchanthangal. This farm provides training to farmers in mulberry cultivation and silk warm rearing, besides transferring new techniques to farmers and also production of cocoons. The farm was established in 1982 in an area of 7.23 acres[135].

Activities of the Farm :

Year	*Cocoon Production*		*Chawkie Rearing*	
1983-84	021.100	kg.	00995	Disease free layings
1984-85	210.000	"	00143	"
1985-86	256.500	"	07338	"
1986-87	100.100	"	11338	"
1987-88	412.900	"	07662	"
1988-89	644.300	"	03591	"
1989-90	322.600	"	00666	"
1990-91	473.100	"	00868	"
1991-92	341.100	"	——	
1992-93	603.800	"	——	
1993-94	417.100	"	——	

Achievements from 1985-86 to 1993-94 :

Year	*Mulberry Cultivation* (in acres)	*Layings consumptions*	*Cocoon production* (in kg.)
1	2	3	4
1985-86	232.50	97013	29399
1986-87	106.00	350000	31000
1987-88	125.00	125000	39500
1988-89	86.45	61000	10000
1989-90	84.90	65000	16037
1990-91	130.50	66054	16900
1991-92	202.25	73213	17714
1992-93	127.00	84484	29122
1993-94	119.70	56886	65520

The details of area under mulberry and number of families engaged in sericulture activities in the district are tabled in *Appendix-23.*

Tamil Nadu Co-operative Silk Producers' Federation Limited, Kancheepuram (TANSILK)

The Tamil Nadu Co-operative Silk Producers' Federation Limited, Kancheepuram, popularly known as TANSILK started functioning with effect from 9 September 1978. The main object of the federation is to procure and market silk yarn required for its members. The federation is unique in its set up in which both producers and consumers are members. There are 648 members, of whom 238 are Class 'A', 409 are Associate members and the government is the other member. The federation has six branches to render better service to the members in the state[136]. They are located at Kancheepuram, Kumbakonam, Madurai, Salem, Coimbatore and Arni.

TANSILK purchases raw silk from Silk Exchange at Kancheepuram opened on 9 January 1991 by the Government of Tamil Nadu. Ready silk is purchased from Associated members and from Silk Reelrs Industrial Co-operative Societies. Both raw and ready silk area sold to the Silk Weavers; Co-operative Societies, Khadi and Village Industries Board and Sarvodaya Sanghs. The Silk Weavers' Co-operative Societies are the major consumers of silk in the State.

Initially, TANSILK was sanctioned a cash credit accommodation of Rs.37.50 lakhs by the Kancheepuram Central Co-operative Bank. At the instance of the Government, the Tamil Nadu Co-operative Bank increased the cash credit accommodation to Rs.100 lakhs during the year 1989-90. The turnover of Tansilk from Rs.39.80 lakhs in 1978-79 has increased to Rs.57.41 crores in 1991-92. Over a period of 14 years, silk transaction improved from 0.13 lakh kg. (1978-79) to 4.03 lakh kg. (1991-92) showing a net increase of 3.90 lakh kg. for the year 1991-92, out of the target fixed at 3.30 lakhs kg. of purchased and sales respectively, the federation has achieved 4.06 lakhs kg. in purchase and 4.03 lakh in sales. During the year 1991-92, the government have fixed a target of Rs.40/- lakhs for net profit, for which the federation has earned 57.65 lakhs as net profit (tentatively). For the year 1992-93 , the Government have fixed a target of 3.5 lakh kg. for purchase and sales. Further, the National Co-operative Development Corporation also sanctioned a sum of Rs.47 lakhs as clean/redeemable share capital to TANSILK during September 1989. Based on the best performance of TANSILK during 1989-90, the National Co-operative Development Corporation has sanctioned an additional sum of Rs.85 lakhs as share capital assistance in 1991 for expanding the business. The government have authorised the TANSILK to operate the soft loan sanctioned by the World Bank under the National Sericulture Project. Out of Rs.36 lakh received so far, a sum of Rs.28.78 lakhs has so far been deposited in various Nationalised Banks and 151 Reelers have been benefited under the above scheme.

A sum of Rs.23.08 lakhs was given as sales incentive to the Silk Weavers' Co-operative Societies, Silk Reelers' Industrial Co-operative Societies and Sarvodaya Sanghs for the year 1991-92. Besides, TANSILK declared a maiden dividend of 11 per cent to its share holders including government for the year 1991-92. A sum of Rs.5.63 lakhs was the dividend, due to the government. The rapid improvement of TANSILK is due to guidance received from the Department of Sericulture and the Government of Tamil Nadu. The achievement of the Tamil Nadu Co-operative Silk Producers' Federation Limited, Kancheepuram for the period from 1978-89 to 1991-92 are shown in *Appendix-24.*

Tamil Nadu Zari Limited, Kancheepuram

With a view to cater to the needs of silk handlooms in Tamil Nadu, the Government of Tamilnadu started a public Limited Company to manufacture gold zari under the name and style, *The Tamil Nadu Zari Limited* [137]. The Tamil Nadu Zari Limited is located at the Industrial Estate, Orikkari, about three km. from Kancheepuram on the Uthiramerur road. The zari unit was registered as a Public Limited Company on 6 December 1971 with the object of manufacturing and supplying quality zari *viz.,* real gold thread to the Silk Handloom Weavers' Cooperative Societies at reasonable price.

The authorised share capital of the company is Rs.20 lakhs divided into 20,000 equity shares of Rs.100/- each. The government have so far invested as paid up share capital to the tune of Rs.13.20 lakhs in the company. The entire shares of the company are held by the Government of Tamil Nadu. The finished product *viz.,* zari is sold to the Silk Handloom Weavers' Cooperative Societies in Tamil Nadu, Khadi Commission and Sarvodaya Sanghs. Zari is sold in term of MARC. One marc weighs 242 grams. The composition of marc is silver 76 to 76 per cent silk 22 to 24 per cent and gold 0.57 to 0.60 per cent. The real gold zari is made by coiling the flattened silver wire around the silk core thread converting into silver thread. Then the silver thread is electroplated with gold cyanide solution and thereby real gold zari is made. The State Bank of India, Kancheepuram branch has sanctioned Rs.8 lakhs as cash credit accommodation. The unit is managed by the Chairman and Board of Directors nominated by the government from time to time. The Commissioner of Handlooms and Textiles is the Chairman. The administration of the company vests with the Managing Director appointed by the government.

The raw materials required for the manufacture of the gold zari are silver wire, red silk, silver thread and gold. Silver wire is purchased from based on the bullion rate on the day of purchase, less Rs.560/- per kg. plus Rs.225/- per kg. as wire drawing charges. Raw silk of 13x15 filature silk is purchased from Karnataka Silk Marketing Board and also from the private parties at Sitlagatta. Silver thread is also purchased from Surat based on

the Bombay Bullion on the day of purchase less Rs.825/- per kg. The existing system of purchasing silver wire and silver thread is followed as per Board's Resolution. Gold is purchased from Bombay and from the State Bank of India, Madras (Service branch) and converted into gold cyanide solution. The selling price of finished product *viz.,* zari is fixed on par with the price of leading Surat brands. In 1992, the product is sold at Rs.2431/- per marc. A cash discount of Rs.50/- is allowed for the payment made in seven days from the date of invoice. The statistical details relating to production and sales for the period from 1973 to 1991-92 are tabled in *Appendix-25.*

Testing Laboratory

The zari unit has one fully equipped testing laboratory for carrying out the analysis of gold thread samples and raw materials. According to the instructions of the Commissioner of Handlooms and Textiles, the silk societies are to submit the samples of gold thread purchased from outside, for testing in the Zari Laboratory, for each consignment. To increase the silver thread production, the unit has purchased from M/s. Surat Engineering Works, Surat, five silver wire flattening machine and 14 spinning machines at a cost of Rs.12.63 lakhs.

Kancheepuram Silk

Kancheepuram is famous for its silk sarees. Silk sarees produced at Kancheepuram not only find a market throughout the country but also in demand in overseas markets like Ceylon, Burma, Malaysia, France, Italy and United States. Kancheepuram is famous for its "Tissues" sarees (silk and lace interwoven) which are produced in different sizes ranging from 24 inches to 52 inches in width and from 18 feet to 30 feet in length. They have attractive borders and variegated designs and colours.

According to the Sericulture Expert of the Government of Tamil Nadu stationed at Hosur, the chief attraction of silk fabric being its lustre, and raw silk being dull in colour, the water used for degumming and dyeing of raw silk ought to have certain properties in order to impart lustre to silk. The water used at Kancheepuram possesses this unique quality of imparting lustre to raw silk and this may be one of the reasons for silk weaving industry which has taken firm root in Kancheepuram[138]. Weaving of silk saree is a cottage industry. A noted feature of this industry is that the whole family including children is engaged in production from winding of the yarn on the bobbins to working the shuttle during the weaving[139]. There were about 5000 looms, twice the number of weavers in 1968. The yarn, after being washed, is dyed in fast colours. Every producer has a dyeing unit as an adjunct. The colour material used has a direct bearing on the price of silk sarees. Another feature of Kanchi silk is that the yarn is twisted twice. Kanchi can be proud of having a twisting factory which is owned by Kancheepuram Kamakshi Amman Silk Handloom Weavers' Cooperative Production and Sales Society. It was

established at a cost of rupees one lakh. Of the 7000 handloom engaged in silk weaving in and around Kancheepuram, about 15 per cent are covered by the Cooperative Societies Silk dealers in private sector-barring a handful of them who own more than hundred looms-get a substantial part of their goods woven from the master weavers who act as intermediary between the weavers and dealers. Out of the five cooperative societies devoted to production and sale of silk, the Kamakshi Amman Society was the first to be started under the Cess Fund Scheme. On the technical side, a change from what is known as "Kamakshipuram Bobby" to "Jacquard" has been introduced by this society for increasing the earning of the weavers.

Thrift Fund

The cooperative societies are able to provide work to the weavers continuously. The members have the benefit of working for reasonable wages. The thrift fund contributed by the weavers from their wages inculcates the habit of savings in them. The Government of Tamil Nadu sanctioned a scheme titled, *Contributory Thrift Fund Scheme* for the benefit of weaver members in the weavers' society in the state. The Director of Handlooms and Textiles selected Kamakshi Amman Society as one of the societies to implement the scheme. The Contributory Thrift Fund consists of subscriptions by members, contribution by the society and contribution by the government. With a view to helping the individual workers outside the cooperative fold, a marketing cooperative society has been started. This society takes finished goods from the weavers, gives them a substantial part of the goods value immediately after the sale and pays them the rest of the amount deducting, of course, a small amount by way of commission.

Designing Centre

Since 1958, the government have been running a Designing Centre to help the weavers introduce fashionable designs. This forms part of the Weavers' Service Centres of the All India Handloom Board. A large number of designs have gone into production for the export market and there has been general acceptance of these designs on the part of the buyers abroad. In the internal market, there is a very large demand from private manufacturers for designs from the centres. The most impressive design acceptance has been in Varanasi, Kancheepuram and Chanderi. A new colour palette of both brilliant and muted tonnes has been introduced at Kancheepuram. The Weavers' Centre has a separate weaving section which consists of looms and weavers drawn from the main weaving centres in the country.

Speciality of design

The speciality of the Kancheepuram loom is in the adai or naksha for the evolution of the designs for which Kancheepuram sarees are famous. In case of adai, graph paper design has to be prepared showing the

interlacements of threads. This design is transferred to the harness of the adai with the help of a trained assistant. In a Banaras loom, naksha is prepared straight without this intermediate stage of a graph paper design. In adai, the strings are horizontally arranged. Whenever new set of designs is woven, the horizontal strings are united, the old loops removed and the new loops tied on to it. In the Banaras loom, the horizontal threads or the *pagias* remain untouched and the *naksha* takes less time then the preparation of an *adai*.

Besides *Jacquard* used in looms, in some cases, frames are used for the sley and there is a frame attached for both dobby and jala. Kancheepuram jala is unique in the methods of selection and lifting of the warp ends for the designs. It is different from that used in the Banaras loom. The Kancheepruam sarees, generally made of pure silk, are woven with three shuttles to give solid border effect. As against the imported Japanese silk which is mostly used for producing Banaras sarees, cultivated indigenous silk is used in the manufacture of Kancheepuram sarees. Kancheepuram sarees differ from Bangalore sarees in one respect, *viz.*, that in the case of former, the number of threads used both in warp and weft are double. Thus, as compared to Bangalore sarees, the Kancheepuram sarees are more closely woven and hence, very ferment in texture. The colour of the border and *pallav* of the sarees is usually in contrast with the colour of the body. This contrast colour effect is produced by adopting two different techniques, *viz.*, i) by three shuttle weaving, by employing one shuttle for the body of the fabric and two shuttles for the two side borders and (ii) by attaching contrasting colour threads to the *pallav* portions. Both these techniques are laborious and time consuming but the weavers are so used to these work that they do it with case and dexterity. Kancheepuram is also famous for weaving cotton sarees but weavers are producing only 60 and 80 counts (coarse variety) which is generally used by the middle class and lower middle class people.

Industrial Estates

In the establishment of Industrial Estates, Tamil Nadu occupies a unique position. For the purpose of creating the climate congenial for the growth of small scale industries, the programme of industrial estates was initiated during the Second Five Year Plan (1956-1961) in Tamil Nadu. The principal objective of this programme is to provide well planned factory accommodation on subsidised rent at suitable places with facilities of electricity, water, transport and communication, banks, post office, canteen, watch and ward, etc., which help to stimulate the growth of small industries[140]. In short, the estates introduce significant changes in the locational and technological pattern of industries.

Industrial Estates are classified under the following broad categories

i) Conventional industrial estates; ii) Functional industrial estates; iii) Ancillary industrial estates; iv) Cooperative and private industrial estates; and v) Developed plots.

i) Conventional Industrial Estates

Conventional industrial estates are designed to meet the requirements of a variety of industries. Factory sheds under the scheme, are mostly allotted for a wide range of manufacturing concerns producing mainly light engineering goods[141]. A conventional industrial estate is functioning at Ambattur.

ii) Functional Estates

Tamil Nadu has been a pioneer in the establishment of Functional Industrial Estates. Functional Industrial Estates are introduced to provide factory sheds for particular type of industry. Some of the special types of industries, such as, drugs and pharmaceuticals, leather, ceramics, electronics, food and fruit based industries require special facilities[142].

Functional Industrial Estates are established to meet the requirements of a group of industries falling under the same category. Leather Industrial estate at Madhavaram, Electrical Industrial Estate at Kakkalur and drugs and pharmaceuticals at Alathur are functional estates in the district.

iii) Ancillary Industrial Estates

The establishment of large industrial projects in the various parts of the state is responsible for the emergence of a large number of small scale industries as feeder units and in order to meet the requirements of such industries, Ancillary Industrial Estates are established[143]. They cater to the needs of large scale industries, by supplying a number of components and parts required by them.

iv) Cooperative, Private Industrial Estates and developed plots

The Cooperative Industrial Estates are owned by the cooperative societies formed by the industrialists who take up sheds in them. These estates are registered under the Tamil Nadu Cooperative Societies Act.

The developed plots envisage acquisition of suitable sites around the industrial areas and to develop them by providing roads, electricity, water, sewage, railway siding facilities, etc., and to allot them to large, medium and small scale industries for constructing their own factory buildings and commencing production.

Tamil Nadu State has taken lead in the establishment of Industrial Estates by providing well planned factory accommodation to small scale industrialists with facilities for water, power, transport and communication, etc[144]. Further, industrial estates, developed plots, worksheds and tiny sheds

have been provided by SIDCO in various blocks of the districts to attract eligible entrepreneurs to start their own industries. This district enjoys the privilege of having the highest number of Industrial Estates in Tamil Nadu. Around the Ambattur Industrial Estate of the district sites have been required and 312 developed plots made available for the entrepreneurs and they have also constructed their own factory buildings in the developed plots. One Rural Work Centre is functioning at Mamandur for handmade paper. The Handmade paper unit, Mamandur supplies flat file cases to government departments[145].

Ambattur Industrial Estate

The Industrial Estate at Ambattur is considered as the Biggest Industrial Estate in the whole of South Asia. An extent of about 1167.04 acres of land was acquired in and around Ambattur for providing built-in-factory space for Small Scale Industries units and developed plots for medium and large scale industries, for the entrepreneurs to put up their own buildings. This has been divided into two phases *viz.*, Southern phase, measuring 637.30 acres and Northern phase measuring 529.70 acres. It lies in the important industrial belt of the city, where a number of large industries like Integral Coach Factory, Central Heavy Vehicles (Tanks) Factory, T.I. Cycles, T.V.S. Group, Dunlop, Omega Cables, etc., are located. It spreads on either side of the Madras-Avadi Road. The Madras-Arkonam broad gauge railway line is its Northern boundary. Labour tenements transport facilities, power and water supply, banking facilities, petrol bunk, industrial training institute, residential accommodations and departmental common service centres are provided. First attempt to establish an industrial estate in Ambattur was made in the year 1961 and it paved way for starting the biggest Industrial Estate during the year 1964 by the Government of Tamil Nadu. Tamil Nadu Small Industries Development Corporation (TANSIDCO) took over the Estates with effect from 1 June 1974[146].

The industrial estate is situated in Madras Avadi Trunk road at a distance of 5 km. from Madras Corporation limits, 11 km. from the Madras central railway station, 13 km. from Madras Fort, 14 km. from Madras Harbour and 24 km. from Meenambakkam Air Port. It was started as a Conventional Industrial Estate catering to the needs of Small, Medium and Large Scale Automobile Engineering Industries. Gradually, other kinds of industries are developing which contribute for the growth of small scale manifold.

About 1100 units, both sheds and developed plots have sprung up in the estate which are engaged in line of activities, *viz.*, Automobile Ancillaries, Cycle Ancillaries, General Engineering Fabrication Units, Readymade Garments, Packaging Industries, Chemical Industries including Drugs, Plastics and Rubber and Electrical and Electronics industries including Cables, Conductors, Domestic appliances, *viz.*, Refrigerators and Air-Conditioners.

Work Sheds

Initially, 245 sheds of 15 different types ranging in an area from 528 sq.ft., to 15,250 sq.ft. to suit the requirements of various industries were constructed by the department of industries and commerce, and allotted on rental basis at subsidised rent which were later in the year 1982, converted into hire purchase and allotted to the eligible occupants themselves. After completing the instalments, sale deed has been issued to the eligible occupants. SIDCO has subsequently, constructed 310 sheds in phased manner of area ranging from 1000 sq.ft. to 4000 sq. ft. and allotted to small scale industries under Hire Purchase Scheme. Up to the year 1989-1990, SIDCO constructed 303 sheds and allotted them under outright basis. During the years 1978 and 1982, SIDCO constructed 200 tiny sheds in an area of 240 and 400 sq.ft. for self employed educated youth.

Developed Plots

Under this concept, land was acquired by government and developed with all infrastructure and allotted to various entrepreneurs for constructing factory buildings. Totally, 312 plots were allotted in two phases covering the area of 784.67 acres. Details of allotment made in the first and second phases are as follows: One hundred twenty plots in 358 acres under Phase I and 192 plots in 426.67 acres under Phase II were developed and alloted to various entrepreneurs.

Similarly, 1370 units consisting of government sheds, SIDCO "HPW Schemes" sheds, SIDCO "Outrightschemes" sheds, SIDCO Tiny sheds and Developed Plots are available at the Ambattur Industrial Estate. Categorywise distribution of industrial unit is as follows: Two hundred forty five government sheds, 310 sheds under SIDCO " HPW Schemes", 303 sheds under SIDCO "Outright schems", 200 sheds under SIDCO - Tiny sheds and 312 units under Developed Plots were distributed.

Power and water

Tamil Nadu Electricity Board has set up two sub-stations in the Estate, one for North Phase and the other for South Phase to supply power to allottees who have started industries. SIDCO draws water from Tamil Nadu Water Supply and Drainage Board and distributes through two Over Head Tanks which have a capacity of 2,50,000 gallons each. Further, SIDCO has its own ground water potential connected with main water grid with pump sets.

Disposal of Sewage

SIDCO has arranged to dispose the effluents of the Industrial Units through underground Sewage system. There are two sewage pumping head works in the South Phase and one head work in the North Phase with Oxidation Ponds, for smooth disposal of sewage water[147].

SIDCO has provided 201 tenements to industrial labourers. They were allotted to them under nominal rental charges ranging from Rs. 24/- to Rs.26/- each. The estate is provided with industrial services like modern machine tool room shop, TANSI, structural work shop and Industrial Training Institute. Other essential services are rendered through banks, insurance companies, post offices, telephone exchange, fire station, railway booking office, petrol bunk, SIDCO's raw material depot and SIDCO's Dispensary. A Technical Information Library, two canteens and 16 godowns are also available in the estate. Ambattur Industrial Estate Manufacturers' Association (AIEMA) has a technical centre equipped with a conference hall and exhibition hall. SIDCO has an auditorium with a capacity of 500 persons and also it has a permanent exhibition hall. Further, the estate has a good transport system for workers throughout day and night with a bus terminus in the middle of the estate. Altogether, the estate has its own turnover of Rs. 150 lakh per annum with an employment potential for about 75,000 workers. The Ambattur Industrial Estate Manufacturers' Association strives to promote and protect the interests of its members.

Industrial Estate, Maraimalai Nagar

An Industrial Estate at Maraimalai Nagar was established by the Madras Metropolitan Development Authority in the Year 1974. The total area of the estate is 540 acres. There are 109 SIDCO sheds in the estate, out of which 49 units are functioning. Industrial units such as engineering, rubber moulded goods, piston pins, piston rings, fabrication, plastic industry and electronic equipments have been set up in the estate.

SIPCOT Industrial Complex, Gummidipoondi

The SIPCOT has established an industrial estate at Gummidipoondi in an extent of 801.38 acres in the year 1982. About 108 industrial units have sprung up in the complex which are manufacturing a wide range of commodities covering steel castings, precision tubes, leather, chemical, LPG cylinders, electrical accessories, pressure vessel, bio - diagnestics, steel forgings, Granite polish, hydraulic cylinders, SMC components, Krall ribbons, paints, fishnet poultry food, textile machine, M.S.ingods, Electronic timer, sheet moulding, pipe fabrication, bricks, mosaic, biscuit, rubber products, edible oil, plastic films, nylon thread, weld electrodes, PVC pipes, auto auxcillary, electric capacitor, bottles, diamond tools, shoes upper, veneer, P.V.C. pipes, glass containers, etc[148]. Details of the names of the units functioning, products manufactured, extent, project cost, employment potential, power and water consumption, etc. are given in *Appendix - 26.*

Industrial Relations

The settlements of industrial disputes through conciliation talks among other things and maintenance of industrial peace form the main functions of the Labour Department. The first progressive measure calculated to improve

industrial relations between the employers and the workers with a view to maintaining industrial peace is contained in the Industrial Disputes Act 1947. This Act has undergone a series of amendments in order to improve the machinery for the settlement and on the other hand to extend additional benefits on the workers[149]. The amendment Acts of 1955, 1956 and 1957 have introduced more important changes in the Act. The Act now provides for the investigation and settlement of industrial disputes through the medium of Works Committee at the level of the factory, through conciliation by Labour Officers, through voluntary reference of disputes for arbitration, and through adjudication by a three tier system of adjudication machinery, *viz.,* Labour Courts, Tribunal and National Tribunals. The other important provisions of the Act are the provisions for giving prior notice to workmen of any change in conditions of service, recognition of settlements arrived at between the parties otherwise than in the course of conciliation proceedings, payment of compensation for involuntary unemployment, retrenchment and closure, priority for re-employment of retrenched workers, quick recovery of money due to workers under awards, settlements or by way of compensation, etc.

The causes of trade disputes are many and varied, but broadly speaking, they arise over rates of wages, hours of work, leave, bonus and other conditions of dismissal, retrenchment, and victimisation of workers. Refusal of employers to recognise unions of their employees, the demand for "closed-shop" and participation in management by the workers and strikes and lockouts are among other causes of industrial unrest.

Labour welfare plays a significant role in the field of labour relations in the industrial society. Though it is the primary concern of the industrialists to provide the labourer with all his needs, the Government of Tamil Nadu have taken the initiative to enter the field of labour welfare. Various labour legislation such as Plantation Labour Act and Factories Act provide for labour welfare for the benefit of the workers. Yet, the statutory provisions do not cover all the needs of the labour community and there is a wide gap between the statutory labour welfare measures and the actual needs. This resulted in the enactment of the Tamil Nadu Labour Welfare Fund Act and the creation of Labour Welfare Fund with annual subscription from both the employer and employee. This fund is administered by the Tamil Nadu Labour Welfare Board. The employers and the employees have been given due representation in the board and they suggest useful schemes to improve the lot of the working class. The Tamil Nadu Labour Welfare Board meets periodically and takes decision on useful labour welfare measures to be implemented.

The board is running a Labour Welfare Centre at Ambattur which is an industrially concentrated area. Tailoring classes for women workers and for the wives and dependants of the workers are conducted in the centre. Each trainee is given a stipend and this helps the workers to get a substantial

increase in family income, as their wives or dependants, on completion of the tailoring course, can also earn independently[150].

Gratuity

Payment of Gratuity Act makes provision for payment of Gratuity to an employee subject to a maximum of Rs.50,000/-. The Act applies to every factory, mine, oil field, plantation, port and railway company and to every shop and establishment in which 10 or more persons are employed. Gratuity is payable to an employee,

a) on the termination of his employment after he has rendered a continuous service of not less than five years; or b) on his superannuation; or c) on his resignation; or d) on his death; or e) disablement due to accident or disease.

The completion of continuous service of five years is, however, not necessary when the termination of the employment of any employee is due to death or disablement. Gratuity is to be paid at *16 days* wages based on the rate of wages last drawn by the employee for every completed year of service or part thereof in excess of six months[151]. Employees are also eligible for provident fund, pension, etc., if they are covered by the provident fund.

Number of cases disposed of under the Payment of Gratuity Act in the year is : 123 in 1986, 32 in 1987, 38 in 1988 and 72 in 1989.

Sickness Insurance

Employees State Insurance Act 1948 makes provision for sickness and medical benefits, etc. Employees not covered by the Employees State Insurance Act are entitled to compensation for any *occupational disease* specified in the Workmen Compensation Act, subject to the conditions specified in the Act. Tamilnadu Labour Welfare Board functioning at Madras, extends educational facilities to Industrial workers by way of scholarship, free school, education to the children, etc. There are 2003 factories in the district which have provided employment for 1,01,917 persons. Of these, 250 factories manufacture machine and machine parts in which 13,021 workers are employed.

Small Scale Industries

There are 27 factories which have provided employment for more than 1000 workers; 43 factories have employed 500 to 1000 workers, while the remaining 1933 factories have employed less than 500 workers.

Organisational set up

The Chief Inspector of Factories is the Head of the Department. The Joint Chief Inspector of Factories is the Regional Head of the Chengalpattu-M.G.R. Region. There are four Deputy Chief Inspectors of Factories, six Inspectors of Factories and eight Assistant Inspectors of Factories under

his control[152]. They are administering the following 15 labour enactments and the Rules framed thereunder, other than the Factories Act, 1948.

1. Payment of Wages Act 1936; 2. Minimum Wages Act 1948; 3. Maternity Benefit Act 1961; 4. Tamil Nadu Industrial Establishment (National and Festival Holidays) Act, 1958; 5. Tamil Nadu Labour Welfare Fund Act 1972; 6. Tamil Nadu Conferment of Permanent Status Act 1981; 7. Payment of Gratuity Act 1972; 8. Equal Remuneration Act 1976; 9. Contract Labour (Regulation and Abolition) Act 1970; 10. Workmen's Compensation Act 1923; 11. Child Labour (Regulation and Abolition) Act 1986; 12. The Tamil Nadu Payment of Subsistence Allowance Act 1981; 13. Dangerous Machines Regulation Act 1985; 14. Inter-State Migrant Workmen Act, 1979; and 15. Cotton Pressing and Ginning Act, 1925.

Besides regular inspections, the Inspectors of Factories undertake inspections, by surprise and also on Sundays and nights in their respective jurisdiction, to find out any violation of labour enactments and in such cases legal action is taken against the factory owners concerned. Apart from these, special inspections and check inspections are also done to curb violation of labour laws. Number of cases inspected, number prosecuted and convicted under various Acts in 1989-90 are tabled below :

No. of cases inspected, prosecuted and convicted under various acts

	No. of cases inspected	*No. of cases prosecuted*	*No. of cases convicted*
1. Shop and Commercial Establishment Act	27,770	1559	1539
2. National Festival Holidays Act	8,289	290	299
3. Catering Establishment Act	2,758	121	160
4. Minimum Wages Act	3,307	79	81
5. Payment of Wages Act	1,935	23	-

There is a separate Testing and Safety division in the district. A medical officer is attached to this division, who issues certificates for workers who are engaged in risky operations.

Child Labour

Sections 67 to 75 of Factories Act 1948 provides certain conditions in the employment of young persons in factories. The Government of India, have enacted another labour legislation called the Child Labour (Regulation and Abolition) Act 1986 for the welfare of the children.

Accidents

Under the Factories Act, 1948, if a fatal accident occurs in a factory, the accident is intimated to the Inspector of Factories concerned and particulars therefore in Form-18 under the Factories Rules of 1950 are furnished. The occurrence of other accidents in the factories due to which the worker happens to be absent from duty for more than 48 hours, is also intimated to the Inspector of Factories, who conducts appropriate enquiry and takes suitable action. In 2003 factories in this region, 29 fatal accidents and 2151 non-fatal accidents have occurred in the year 1989. The provisions of health, safety and welfare of the workers employed in the factories are enforced by the department as is evidenced from the following :

Health and Safety

Section 49 of the Factories Act, 1948, contemplates that every factory which employs more than 500 workers must have one Labour Welfare Officer. Seventy such factories have appointed Labour Welfare Officers in the district. Section 40(B) of the Factories Act lays down, *inter-alia* that a factory which employees more than 1000 workers must have one Safety Officer. 27 such factories have employed Safety Officers in the region. About 250 factories have provided canteen facilities to their workers.

Creches

Section 48 of the Factories Act stipulates that a factory where more than 30 women workers are employed must provide and maintain a creche for the children of the women workers and that the rooms of the creches must be adequately lighted and ventilated. About 50 factories have provided creches in their premises.

In addition to this, a Labour Welfare Board is constituted to look after the welfare of the workers employed in factories. The board provides medical and educational facilities to the workers from the labour welfare fund. Tailoring classes are run by the board for women dependants of workers. Welfare centres have been located in Kancheepuram, Ambattur, Thiruvothiyur, Ennore, Madhavaram and Tambaram.

Industrial Potential

The Department of Industries and Commerce has a wide range of functions to perform - from the revival and resuscitation of traditional handicrafts to the promotion of modern and sophisticated small industries, from fortering the growth of Cottage industries to the Scientific Development of ceramics and glass industries, from helping to organise industrial cooperatives on sound lines to the concentrated efforts for the integrated development of selected areas under the Rural Industries Project Scheme, from undertaking extensive geological surveys for tapping the mineral wealth to the measures for the development of chemical industry, and the

implementation of a comprehensive range of schemes of assistance aimed to help the industries at various stages of development. In short, the department is concerned with the development of the various segments of importance to the industrial economy of the State and Country[153]. It may thus be seen that it plays a vital role in promoting the development of Industries in general and Cottage and Small Scale Industries in particular. Thus, it does in a number of ways but chiefly in the form of allotment of factory space in Industrial Estate and Developed Plots, financial assistance, allotment of scarce raw materials and provision of servicing and training facilities.

District Industries Centre

The District Industries Centre, Chengalpattu-MGR district was established on 1 June 1978, with headquarters at Kancheepuram and Branch Office at Guindy. When the programme of DIC was implemented in 1978, there were only 1636 small scale industries in Chengalpattu-MGR district which had been given permanent status. As on 31 March 1988, the number of SSI units has increased to 8797. The center acts as the chief coordinator of the National aim of rural reconstruction. It coordinates various central and state government departments, agencies like state corporations, boards, etc., and acts with optimum speed for the purpose of restructuring the economy and generate new employment opportunities[154].

Chengalpattu-MGR distrcit adjoins the Metropolitan city of Madras. Land for industrial use has become a scarce commodity within Madras Metropolitan Development area. Starting of new industries is to be necessarily away from Madras Metropolitan Development area limits[155]. Chengalpattu-MGR district has its boundaries all round Madras city embracing it. It is in this context that the Industrial potential of Chengalpattu-MGR district is immense, since new entrepreneurs like to locate their units near the big Metropolitan markets.

The District Industries Centre functioning at Kancheepuram plays a pivotal role in planning and implementing programmes for the promotion of industries in general and particularly in the small scale sector in the district. It provides assistance and support for the existing units and new industries and also for marketing of the products of small scale industries. DIC promotes infrastructure facilities such as power, transport and communication which are available in good measure in the district. Major industries have been established at Avadi, Ambattur, Thiruvothiyur, Ennore, Villivakkam, Vandalur, Tiruvallur, Thiruvanmiyur, Padi, Guindy and Porur. They manufacture wide range of products, tyres and tubes for cycles, tractors, automobiles, rail coaches wagons and also biscuits, matches, transformers and switch gears. In the small scale sector, transport equipments, automobile spare parts, leather products metal and rubber products are produced. A free trade zone

(FTZ) has come up near Tambaram. (FTZ has been dealt with, in detail in the chapter on *Banking, Trade and Commerce*).

Besides industrial estates through Government agencies, *viz.*, SIDCO, SIPCOT, TIC, TALCO, DIC, M.M.D.A., etc., private industrial estates have also sprung up in the district. Industrial growth centres have been identified at Sriperumbudur and Madurantakam. Kancheepuram, Madurantakam, Cheyyur, Ponneri, Uthiramerur, Uthukottai, Tiruttani and Pallipet of the district have been declared by Government of Tamil Nadu as industrially backward areas, with a view to attract new industries in the district[156]. Entrepreneurs who would like to start new industries can avail themselves of 15 per cent state subsidy. The district has good potential in starting new industries. The various units in the district and the products manufactured by them can be seen at a glance below[157]:

1. Agro based Industries	-	Modern Power Ghani; Modern Bakery; Modern Rice Mill; Groundnut oil Refining
2. Forest based Industries	-	Modern Packing cases; Modern Carpentry units; Saw Mills; ADV Carts; Wooden Boats.
3. Animal Husbandry Based Industries	-	Leather Chappals; Industrial shoes; Leather Washers; Leather gloves; Modern Tannery.
4. Textile based Industries	-	Cotton Knitted wear; Coir mates, Textile bleaching, Readymade Garments.
5. Chemical based Industries	-	Tyres retreading; Oil bonded Distembers; Drugs and Pharmaceuticals; Fibre glass reinforced plastic products,

		Thermo welded plastic goods; Bakelite electrical accessories; Retread Rubber moulded industrial goods, modern lime shells; Bleaching powder, laboratory chemicals.
6. Engineering Units	-	Aluminium extruded products; Two wheelers repairing and servicing, steel furniture; Motor Fans, Fluorescent, tube light fittings; Building Hardwares; Tractor Trailors and Domestic utensils.
7. Electric based Units	-	Small Transformers, neon glow sign unit, washing machine, floor cleaners, hot plate, Cooking range and backing Ovens, heating elements and heaters, automobiles, electrical accessories, Electric lifts; Industrial furnaces and Control panels.
8. Electronic based Units	-	T.V. parts and accessories, digital clock, battery, eliminators, Investors.
9. Ceramic based Industries	-	Modern pottery, AC pipe fittings, blue metal jelly, chamber bricks.

Carborundum Universal Limited

Carborundum Universal Limited, a private concern, has established a medium scale industry at Thiruvothiyur in the year 1954. This industry is engaged in the manufacture of coated abrasives, bonded abrasives, super refractories, aluminium oxide grains, synthetic fused refractory grains, calcined bauxite/malochite, electrocast refractories, silicon carbide grains, raw bauxite and industrial ceramics. The paid up share capital of the industry at the time of inception was Rs.50 lakhs which increased to Rs.2.01 crores in the year 1970. Further due to its spectacular growth, the share capital of the industry doubled in 1983 and in 1990, the industry witnessed a tremendous growth and the share capital touched a new height of Rs.8.35 crores in the year 1991.

Welfare Measures

The industry has introduced several welfare measures to the employees, workers and they include medical and first aid, uniforms, canteen facilities, leave fare assistance, educational allowance, training for employees scholarships to employees children, conveyance allowance, welfare fund for employees, interest subsidy and cash award for family planning.

Medical and First Aid

A fully equipped ambulance room is functioning round the clock to treat the employees. In addition to First aid to accident cases, oral medicines for light ailment are also provided to the employees, Medical check up is taken periodically to care for employees working in hazards. A sum of Rs.240/- on the medical expenses is reimbursed to the exempted employees (not covered by E.S.I.) Health Insurance Scheme is in force for self as well as spouse of the employees for hospitalisation up to a sum of Rs.13,500/- each. In the premium payable for the above Health Insurance Scheme, 75 per cent of the premium is borne by the employers. Employees are provided three sets of terrycotton uniform per year. They are also granted monthly washing allowance of Rs.15/- each. Two turkey towels are distributed to them per year. One pair of shoe with socks and required number of Hamam soaps are given to the employees every year. A sum of Rs.700/- per annum is given for all employees as Education allowance. The training department identifies the training needs for the development of employees and the management reimburses the cost of text book, notes, fee, paid to the institution for continuing higher education by employees for self professional, technical and academic. Scholarships are given to the children of the employees on merit basis to pursue higher education above +1 level from the management family trust. Conveyance allowance of Rs.16/- per mensum is given to the employees. Company runs staff buses on nominal charges to benefit the employees, residing at various localities in the city. A fund has been constituted for the welfare of the employees. The fund is managed by the management and office bearers of the employees union[158].

Lucas - TVS Limited

M/s. Lucas-TVS Limited, a foreign collaborated company has set up a medium scale industry in the year 1962 at Padi about 8 km. from Madras on an investment of Rs.2.74 crores. It rose to Rs.12.50 crores as of 31 March 1991, by issue of bonus shares capitalising the general reserve. The industry has investment of 51 per cent - Lucas industries plc., U.K. by Equity participation. The industry is engaged in the manufacture of quality products namely auto electrical components for automobile industry. Steel and copper are the major raw materials used in manufacturing finished products of which 21 per cent is imported. The industry has provided employment to 2800 persons. Employees in the industry are members of the Tamil Nadu National Engineering Employee's Union[159]. The installed capacity of the industry on the basis of double shift/production as on 31 March 1991 is tabled in *Appendix-27.*

Sundaram - Clayton Limited (Brakes Division)

M/s. Sundaram - Clayton Ltd., a pioneer in industrial sphere has set up Brakes Division at Padi, which is 12 km. towards west of Madras in the year 1962. it is a medium scale industry which is engaged in the manufacture of air assist and full air actuation system for automotive and non-automotive applications and non-ferrous (aluminium) castings. The installed capacity of the industry is 1,19,000 sets, The industry has actual production capacity of 66,000 sets and 700 tonnes of non-ferrous castings. The investment during 1992 is Rs.15.00 crores[160]. The unit has technical collaboration with WABCO Westing House, West Germany and American Standards Inc., U.S.A.

It secures raw materials mainly from Bharat Aluminium Company Ltd. During 1962, the industry provided employment to 50 persons which has risen to 1200 in 1992, involving a sum of Rs.1104.2 lakhs towards wages per annum. The employees have formed a union which is a branch of the Tamil Nadu National Engineering Employees' Union. Medical aid, foodstuffs at subsidised rates and loan assistance are extended to the employees. The industry has engaged many sub-contractors for the supply of sub-assembling and this provides more employment opportunities to the people of the Chengalpattu-MGR district.

Sharon Granites Factory, Gummidipoondi

Sharon Granites Factory sprung up under private sector has opened the door to a new foreign exchange earner. The unit, located in the industrial suburb of Gummidipoondi, 48 km. from Madras on the Grant Northern Trunk Road, is manufacturing specialised granite products. The Sharon Granite Factory has a total covered area of 16,000 sq.ft. and is ideally set in four acres. The unit is functioning from 12 December 1990 and is making Japanese round lanterns which are an essential lanterns is waste granite-blocks. The unit has been functioning with the technical guidance from a

private entrepreneur (Seoul, Korea) and is a 100 per cent export oriented industry to Japan. The main feature of this project is that all the machines are indigenous. It is a highly labour intensive unit and has employed about 200 workers. The total annual foreign exchange earning is Rs.2 crores[161]. The unit has also started production of other accessories of tomb stone, like range.

The Surgical Instruments Plant, Nandambakkam

The Surgical Instruments Plant at Nandambakkam near Madras was commissioned on September 1, 1965. It is one of the three projects undertaken by the Indian Drugs and Pharmaceuticals Limited, with Soviet collaboration and assistance. The surgical instruments plant at Nandambakkam is the first major project in the country devoted to the manufacture of surgical instruments. About 200 different types of instruments are manufactured by this plant to cater to the needs of various surgical disciplines such as General Surgery, Opthalmology, Gynaecology, E.N.T., etc. The plant, by way of its diversification programme has added the following production facilities: (a) Manufacture of paramedical equipments, hospital, furniture and items for Health Care Programme and mobility aids such as calipers, crutches, etc. (b) Production of drug formulations such as powdervials, ampoules, liquid orals, capsules and tablets, etc., (c) Fabrication of chemical process equipments. As a welfare measure, the plant has provided quarters for about 500 employees in its colony[162].

APPENDIX-I

Category-wise Power Consumption details in the district

Sl. no.	*Category*	*No. of Consumers*	*Connected Load in MVA*	*Consumption in 1986-87 (Mu)*
1.	Domestic	3,42,600	279	236
2.	Commercial	64,286	54	89
3.	Agriculture	81,838	354	1223
4.	Industrial	24,523	471	761
5.	Water works	1,974	9	14
6.	Street lights	4,005	4	13
7.	Huts	1,02,154	4	16
8.	Others	835	44	100
	Total	6,23,215	1219	2452

Chief Engineer / Planning, Tamil Nadu Electricity Board, Madras - report, dated 26 March 1988.

APPENDIX-2

List of Sub-stations

Sl. no.	*Name of Sub-station*	*Voltage Rating K.V.*	*Capacity*	*Date of commis-sioning*	*Maximum demand reached so far* (MVA)
1	*2*	*3*	*4*	*5*	*6*
1.	Sriperumbudur	400/230	315	13.3.1987	-
2.	Korattur	230/110	160	1947	152
		110/33	75		80
		33/11	10		10
3.	Singaperumal Koil	230/110	230	4.7.1977	185
4.	Panjetty	110/33	20	17.6.1979	24
		110/11	20	17.6.1979	9
5.	Avadi	110/33	20	28.6.1986	21
		110/11	20	28.6.1986	13
6.	Ambattur Estate	110/11	32	-	21
7.	Ambattur SIDCO	110/11	10	-	8
8.	Ennore	110/33	75	-	59
		110/11	20	-	13
9.	Manali	110/11	10	-	12
		33/11	5	-	-
10.	Kadapperi	110/33/11	65	19.9.1963	38
11.	Porur	110/33/11	70	19.7.1977	53
12.	Velachery	110/33/11	63	11.12.1981	41

1	2	3	4	5	6
13.	Tiruttani	110/11	20	12.6.1967	14
14.	Kancheepuram	110/33	50	1940	47
		110/11	20	-	-
15.	Tiruvallur	110/33	30	31.3.1961	28
		110/11	6	-	-
16.	Chengalpattu	110/33	20	30.10.1970	29
		110/11	10	-	-
17.	Thiruporur	110/11	10	30.5.1980	5
18.	Acharapakkam	110/33	50	23.7.1958	45
		110/11	10	-	7
19.	Ponneri	33/11	15	15.8.1955	14
20.	Gummidipoondi	33/11	15	25.10.1959	6
21.	Sothuperumbedu	33/11	6	25.3.1972	6
22.	Thiruvothiyur	33/11	75	-	13
23.	Poonamallee	33/11	10	6.9.1966	10
24.	Guindy	33/11	10	27.2.1967	9
25.	Thiruvanmiyur	33/11	10	18.1.1967	8
26.	Pallavaram	33/11	15	18.1.1972	10
27.	St. Thomas Mount	33/11	15	2.1.1968	9
28.	Athimanjeripet	33/11	10	26.3.1963	7
29.	Pallur	33/11	10	20.9.1968	4
30.	Sunguvarchatram	33/11	6.3	-	3
31.	Nelvoy	33/11	8	4.8.1975	5
32.	Walajabad	33/11	10	24.1.1968	1
33.	Damal	33/10	10	28.5.1974	6
34.	Uthukottai	33/11	6	8.7.1957	4
35.	Vadumarudai	33/11	10	17.4.1977	6
36.	Bandikavanur	33/11	63	3.5.1982	5
37.	Thirukalikundram	33/11	10	23.4.1972	9
38.	Sadras	33/11	6	27.7.1968	3
39.	Guduvancheri	33/11	9	27.1.1958	6
40.	Maraimalainagar	33/11	10	12.11.1980	6
41.	Maduranthakam	33/11	10	14.4.1955	8
42.	Nugambal	33/11	10	21.6.1956	7
43.	Kadugupattu	33/11	6	27.3.1967	6
44.	Orathy	33/11	3.15	29.12.1979	6
45.	Kadambathur	33/11	10	28.9.1958	9
46.	Perambakkam	33/11	6	26.9.1984	5
47.	Thinnanur	33/11	10	5.7.1958	4
48.	Kiranur	33/11	10	19.10.1955	7
	Total		1850.45		

APPENDIX-3

Employment position in the Madras Refineries Ltd. from 1969 to 1991

Year	*No. of persons under employment*
1	*2*
1969	415
1970	430
1971	455
1972	466
1973	450
1974	459
1975	492
1976	522
1977	505
1978	512
1979	493
1980	435
1981	524
1982	553
1983	609
1984	887
1985	1000
1986	1111
1987	1130
1988	1124
1989	1273
1990	1357
1991	1380

Deputy General Manager (P&A), Madras Refineries Ltd., Manali - report dated 24 June 1991 & Manager (Per.) dated 21 July 1992.

APPENDIX-4

The Production and Sales particulars of the Kancheepuram Kamashiamman Co-operative Spinning Mills Limited, from 1965-66 to 1990-91

Year	Production		Sales	
	Kg.	Value	Kg.	Value
	(figures in lakhs)		(figures in lakhs)	
1	2	3	4	5
1965-66	0.25	2.60	0.25	2.15
1966-67	2.26	20.64	1.86	17.84
1967-68	3.42	32.80	3.23	31.58
1968-69	3.55	35.90	3.55	34.87
1969-70	4.41	52.85	4.71	55.84
1970-71	5.16	66.37	5.22	66.37
1971-72	4.48	68.10	3.90	61.30
1972-73	2.80	51.89	3.50	61.20
1973-74	3.55	141.38	3.44	159.03
1975	3.44	71.57	3.03	38.73
1976	5.56	111.41	5.46	111.38
1977	5.32	142.33	5.33	138.12
1978	6.60	170.90	6.75	176.70
1979	7.25	213.30	6.83	201.96
1980	8.66	248.48	8.73	247.00
1981	9.60	260.68	9.62	259.94
1982	11.58	335.13	11.39	339.84
1983	12.07	374.42	12.00	371.11
1984	12.26	416.15	11.88	395.56
1985	13.92	464.93	13.79	475.37
1986	12.95	410.68	12.39	390.90
1987-88	15.38	630.21	15.51	626.69
1988-89	12.85	616.45	14.26	667.89
1989-90	14.00	718.86	12.96	667.03
1990-91	13.27	765.28	12.74	713.19

Ibid.

APPENDIX - 5

Details of share holders, share capital by growers and government share from 1980-81 to 1990-91

Year	*Number of share holders including government share*	*Share capital by growers*	*Government share*	*Total*
1	*2*	*3*	*4*	*5*
		(Rupees in lakhs)		
1980-81	11,731	95.81	25.00	120.81
1981-82	12,194	121.47	25.00	146.47
1982-83	12,177	121.23	25.00	146.23
1983-84	11,994	118.64	25.00	143.64
1984-85	11,504	110.30	25.00	135.30
1985-86	11,409	109.01	25.00	134.01
1986-87	14,407	125.00	25.00	150.00
1987-88	16,123	196.41	36.11	232.52
1988-89	16,671	195.63	36.11	231.74
1989-90	15,107	170.93	36.11	207.04

Special Officer, Madurantakam Co-operative Sugar Mills, Padalam, report dated 21 November 1991.

APPENDIX - 6

The Madurantakam Co-operative Sugar Mills. Licensed capacity and actual sugar production from 1960-61 to 1990-91

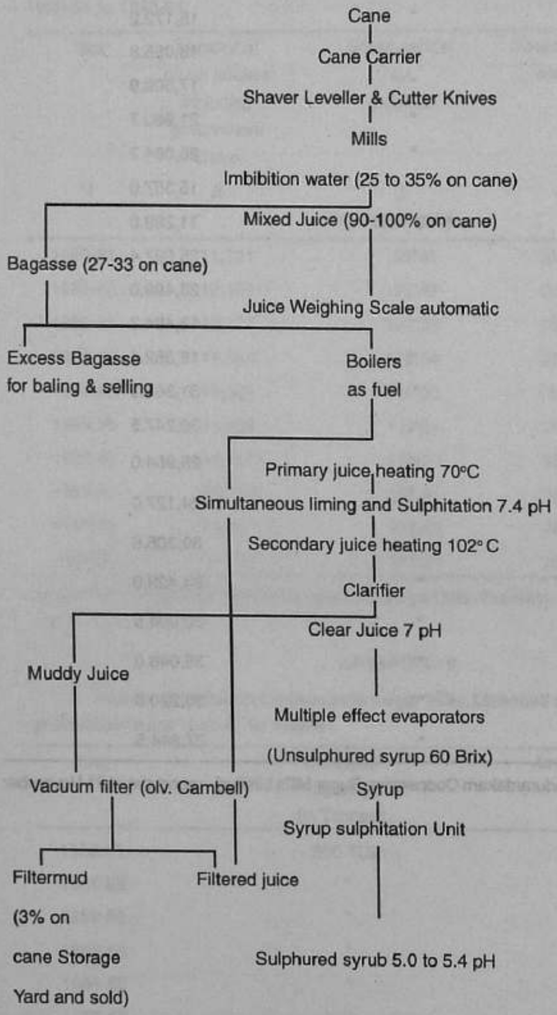
Year	*Licensed capacity* (in Tonnes)	*Actual production* (in Tonnes)
1960-61	800 TCD	6,424.4
1961-62	"	8,059.0
1962-63	"	7,188.4
1963-64	"	9,410.9
1964-65	"	11,671.3
1965-66	"	13,047.3
1966-67	"	8,569.7
1967-68	"	6,237.3

1968-69	100 TCD	14,814.3
1969-70	"	14,165.5
1970-71	"	15,172.2
1971-72	"	13,055.8
1972-73	"	17,609.9
1973-74	"	21,980.7
1974-75	"	20,094.7
1975-76	"	15,357.0
1976-77	1750 TCD	11,239.0
1977-78	"	25,097.4
1978-79	"	23,499.0
1979-80	"	13,494.3
1980-81	"	19,352.4
1981-82	"	31,366.3
1982-83	"	30,247.5
1983-84	"	25,954.0
1984-85	"	24,127.0
1985-86	"	39,306.5
1986-87	"	34,428.0
1987-88	"	30,004.5
1988-89	"	35,046.0
1989-90	"	30,220.0
1990-91	"	37,844.5

Special Officer, The Madurantakam Cooperative Sugar Mills Limited - report dated 21 November 1991.

APPENDIX - 7

Process flow chart showing the sugar manufacturing



APPENDIX - 8

Details regarding the total converted members, total share collection, total converted amount and entrance fees collected from 1983-84 to 1990-91

Sl. no.	Year	Total converted members	Total share collection (Rs.)	Total converted Amount (Rs.)	Entrance fees (Rs.)
1	2	3	4	5	6
1.	1983-84	800	67,97,030.00	6,69,600	14,720
2.	1984-85	2622	2,77,659.44	22,52,400	55,410
3.	1985-86	503	47,855.00	3,86,200	9,655
4.	1986-87	9167	99,985.00	58,90,800	1,40,680
5.	1987-88 }	489	3,15,584.00	2,10,400	3,970
6.	1988-89 }				
7.	1989-90	1666	8,46,063.00	3,60,400	8,960
8.	1990-91	2078	2,27,873.50	5,08,400	9,420
	Total	17325	1,18,87,599.94	1,02,78,200	2,42,815

Ibid.

APPENDIX - 9

Number of persons employed and wages paid to them per annum from 1984-85 to 1990-91

Sl. no.	Year	No. of persons employed	Wages paid per annum (Rs. in lakh)	Related months
1	2	3	4	5
1.	1984-85	328	37.64	October-September
2.	1985-86	412	40.01	-do-
3.	1986-87	432	66.25	-do-
4.	1987-88	392	73.35	-do-
5.	1988-89	399	36.68	October-March
6.	1989-90	398	93.61	April-March
7.	1990-91	429	129.09	-do-

Ibid.

APPENDIX-10

Details regarding the sugarcane production (in tonnes) from 1983-84 to 1989-90

Sl. no.	*Planting season*	*Regd. areas (AC)*	*Available Tonnes*	*Total Production*	*Own cane crushed tonnes*	*Diversion from other mills-cane tonnes*	*Diversion to other mills-cane tonnes*	*Total crushed cane tonnes*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1.	1983-84	4665	1,40,000	1,60,000	1,19,273.325	4,350.462	-	1,23,623.787
2.	1984-85	8335	2,50,000	2,85,000	2,54,400.827	48,615.022	-	3,03,015.849
3.	1985-86	7000	2,30,000	2,10,000	1,79,472.612	59,183.015	-	2,38,655.627
4.	1986-87	5637	1,60,000	1,90,000	1,58,396.299	1,01,348.042	-	2,59,744.341
5.	1987-88	8933	2,52,000	2,77,000	2,51,863.887	39,749.106	-	2,91,612,993
6.	1988-89	8860	2,68,000	2,70,000	2,46,452.260	1,340.478	-	2,47,792.738
7.	1989-90	9414	2,72,000	2,97,000	2,53,383.338	14.984	18,037.271	2,53,398.322

Administrator, The Tiruttani Co-operative Sugar Mills, Thiruvalangadu, report dated 7 December 1991

APPENDIX-11

Sri Ram Fibres Limited

Manufacturing Process

1. Continuous polymerization and raw chip production process

A prescribed amount of flake caprolactum is fed into melting tank, where the flake caprolactum is melted. The molten caprolactum thus obtained is batchwise delivered from melting tank to measuring tank through filter. In measuring tank, water of about 0.80 weight per cent is added to molten caprolactum. After molten caprolactum is mixed with water completely, the caprolactum solution is batchwise delivered from measuring tank to intermediate tank to be stored. The atmosphere in melting tank, measuring tank and intermediate tank is sealed completely by pure nitrogen gas so that caprolactum solution may be prevented from being oxidized.

Then caprolactum solution is continuously delivered with feed pump to the pre-polymerizer through leaf type filter. Equipment and pipelines between melting tank and the pre-polymerizer are heated by hot water. In pre-polymerizer, caprolactum solution is heated while uniformly agitated by agitator and this initial reaction proceeds evaporating some quantity of water.

Caprolactum solution, reaction of which has proceeded to a certain degree in pre-polymerizer, is delivered with pump continuously from pre-polymerizer to polymerizer, which consists of a VK tube and an ageing tank. At the top of VK tube, surplus water is evaporated so that water content of caprolactum solution may reach to a prescribed one suitable for obtaining desired polymer. Then, caprolactum solution under the high temperature flows continuously and uniformly from the top of VK tube to the bottom of ageing tank. From VK tube to ageing tank, polymer is delivered with screw pump continuously.

Both pre-polymerizer and polymerizer are heated with Dowtherm, and their temperature and level, and the pressure in pre-polymerizer are automatically controlled.

Thus at the bottom of ageing tank, polymer suitable for tyre cord is obtained. Inside the polymerizer, some perforated plates are installed so that the flow rate and the heat conduction can be kept uniform.

Polycaprolactum thus obtained is delivered through distributing tube to spinning head which consists of a pump block, a spinning pump, a nozzle block and a nozzle pack. In nozzle pack, the molten polymer is filtered through wire netting and is spum through spinneret crifices of nozzle plate.

And the polymer discharged from spinning head enters cooling vat to be solidified into strands. Strand is delivered through feed roller to granulator to be cut into raw chip. Raw chip is conveyed by air into a storage silo through cyclone separator, and through screen feeder, which separates dust and miscut chip from the regular cut raw chip.

Raw chip thus obtained should have a fine cross section as well as proper chemical and physical properties. Raw chip at this stage contians about 10 (weight) per cent of monomer and oligomer. If such raw chip as containing about 10 (weight) per cent of monomer and oligomer is used without further treatment, troubles are bound to occur both in the processes succeeding to polymerration and in the processing of cord. Washing and drying of raw chip is required to remove such monomer and oligomer.

2. Continuous chip treatment process

Raw chip is conveyed by air from storage silo to upper storage silo above washing tower through dust separator and then it is fed into lower storage silo above washing tower. The level of raw chip in lower storage silo is detected by torque motor and regulated by double sluice valves automatically.

In the tower, raw chip flows continuously from the top to the bottom and monomer and oligomer which remain in raw chip are extracted by hot water which flows continuously from the bottom to the top.

Washed chip discharged from the bottom of washing tower is, after being removed of water at centrifugal dehydrator through the screw feeder, conveyed to the top of drying tower. Hot water eliminated from the chip in the screw feeder and the centrifugal dehydrator enters the collector tank, and together with new hot water it is used again as washing water. It is sent to washing tower through head tank. Water content of chip at the outlet of centrifugal dehydrator is less than 13 (weight) per cent. Amount of chip fed into drying tower is detected by torque motor and is regulated by screw feeder. In drying tower, washed chip flows continuously from the top to the bottom and is dried with pure hot nitrogen gas. Dried chip is delivered continuously to storage silo at the bottom of drying tower.

Chip thus obtained at this process contains less than one (weight) per cent of monomer and oligomer and less than 0.05 (weight) per cent of moisture. And then chip is conveyed to another silo by nitrogen gas.

3. Spinning process

Dried chip enters chip mixer in a fixed amount from storage silo. In mixer, dried chip is mixed up with a fixed amount of gliding agent and heat stabilizing agent. Chip thus mixed with these additives is stored in chip hopper, and then conveyed to small hopper at the top of extruder by rotary feeder. Chip is always protected by pure nitrogen gas all through the process from drying tower to extruder against oxidization and moisture absorption. In extruder, chip is molted and mixed homogeneously. Molten polymer thus obtained is delivered through distributing tube to spinning head which consists of a pump block, a spinning pump, a nozzle block and a nozzle pack. In nozzle pack, molten polymer is filtered through wire netting, and is extruded through spinneret orifices of nozzle plate into air to be undrawn yarn. Then spun polymer enters blowing section through hood heater and is gradually cooled into solid state by air blown at a moderate speed and temperature.

Subsequently solid thread enters spinning tube equipped with a heater and is gradually cooled. Thread glides on the surface of two preparation rollers which are wet with oiling agent specially prepared to be most suitable for taking up,stretching and processing thereafter. Processed thread is wound on bobbin through godet rollers. Package of undrawn yarn thus obtained is carried to the stretching process by transport car.

4. Stretching process

Package of undrawn yarn is set on creel of draw twister. And then yarn is stretched in two staps, cold and hot steps, by draw twister equipped with electric heater. In this case, draw ration is about 5. Yarn is wound on pirn, being twisted at the rate of about 20 twists per meter. Thus yarn is wound on a pirn up to 5.0 kg weight. Special treatment and finish are applied to roller and pirn of both take up machine and draw twister.

In this process, when amount of yarn wound on pirn becomes to be a prescribed one, automatic stopper works, and pirns with yarn may be all together replaced with empty pirns. Pirns with yarn are sorted and carried to the twisting process.

5. Twisting process

Stretched yarn is given twist in Z direction (in the same direction as that of stretched yarn twist) by ring twisted for single twist, and wound on flanged bobbin. The number of twist suitable for 840 denier is 470 T/M.

The tail end of yarn on pirn being single-twisted is connected with the head of yarn on pirn to be single-twisted next.

Thus yarn is fed continuously to single twister. The connection mentioned above is done in "double-one-fold-weaver's knot", and when the yarn is cut during being single-twisted, the connection is done in the same way.

Single-twisted yarn thus obtained is doubled and given twist is S direction by ring twister for ply-twister and wound on flanged bobbin. The number of ply-twister suitable for 840d is 470 T/M.

Then it is carried to the weaving process.

6. Weaving process

Loom shall be adjusted according to the specifications of fabric. Ply-twisted cord is woven into fabric by picking wefts and the woven fabric is wound to Take up roller.

When some defects are found in cord during the weaving process, the defective part of cord is cut off and after that the cord is connected in 'machine knot".

Those bobbins on which ply-twisted cord with knots is wound should be so arranged in creel stand, so that cord from these bobbins may not concentrate in one part of fabric.

APPENDIX-12

Details of sanction and disbursement of term loan by SIPCOT in the district

Sl. no.	*Year*	*Sanction*		*Disbursement amount* (Rs.in lakhs)
		Number	*Amount*	
1	*2*	*3*	*4*	*5*
1.	1980-81	3	93.00	56.00
2.	1981-82	-	3.00	83.00
3.	1982-83	9	436.00	60.00
4.	1983-84	20	948.00	189.00
5.	1984-85	15	905.00	315.00
6.	1985-86	16	772.00	479.00
7.	1986-87	23	1,549.00	682.00
8.	1987-88	14	1,050.00	914.00
9.	1988-89	8	483.00	796.00 *
10.	1989-90	17	1,061.00	900.00
Since inception		111	6,007.00	4,497.00

* Includes disbursements made in respect of sanctions made in earlier years also.

General Manager, SIPCOT, Madras, report dated 1 February 1991.

APPENDIX-13

Details of sanction and disbursement under Interest Free Sales Tax loan scheme by SIPCOT in the district

Sl. no.	*Year*	*Amount sanctioned*	*Amount disbursed* (Rs.in lakhs)
1	*2*	*3*	*4*
1.	1980-81	18.22	12.91
2.	1981-82	6.02	6.02
3.	1982-83	9.37	9.37
4.	1983-84	44.96	11.51
5.	1984-85	36.86	38.28 *
6.	1985-86	59.56	68.34 *
7.	1986-87	49.08	50.18 *
8.	1987-88	103.57	113.30 *
9.	1988-89	127.16	90.16
10.	1989-90	95.27	87.35

* Includes disbursement made in respect of sanctions made in earlier years also.

General Manager, SIPCOT, Madras, report dated 1 February 1991.

APPENDIX-14

Details of sanction and disbursement under State Capital subsidy scheme including special subsidy scheme by SIPCOT in the district

Sl. no.	*Year*	*No.of units*	*Sanction*	*Disbursement* (Rs. in lakhs)
1	*2*	*3*	*4*	*5*
1.	1982-83	1	11.50	—
2.	1983-84	10	82.50	17.23
3.	1984-85	17	202.36	95.09
4.	1985-86	12	121.85	67.31
5.	1986-87	13	155.22	108.67
6.	1987-88	21	240.03	156.32
7.	1988-89	15	184.91	138.78
8.	1989-90	14	188.42	197.05 *

* Includes disbursements made in respect of sanctions made in earlier years also.

General Manager, SIPCOT, Madras, report dated 1 February 1991.

APPENDIX-15

Industries sponsored by TIDCO in Chengalpattu- MGR District

Sl. no.	Name of the Industry	Product manufactured	Location	Cost of the Project	TIDCO'S Commitment in equity	Employment potential	Date of commencement of the project.
1	2	3	4	5	6	7	8
1.	Dynavision Limited	T.V.Sets	Kottivakkam	232.22	25.00	6.00	June 1975
2.	Tamilnadu Alkaline Batteries Limited	Nickel Cadmium Batteries	Ambattur	42.00	25.00	120	January 1982
3.	The Southern Borax Limited	Borax and Boric Acid	Ponneri	145.00	10.40	85	January 1976 (Unit is not in operation now)
4.	Tamilnadu Dadha Pharmaceuticals Limited	Drugs and Pharmaceuticals	Dadhanagar Pallavaram	785.00	28.68	750	Existing Company joined with TIDCO
5.	Marthi Crystal Salts Company Ltd.	Industrial Salt	Thirupporur	119.00	26.48	50+ 900 casual	March 1976
6.	Acetylene and Industrial Gas Cylinder Ltd.	Acetylene Cylinder	Ambattur	88.00	6.50	70	Feb. 1983
7.	Automotive Coaches and Components Ltd.	Cabover for front end structure for heavy commercial vehicles and bus body.	Gummidipoondi	485.00	47.00	750	June 1987

1	2	3	4	5	6	7	8
8.	Integrated Water Proofing Ltd.	Polythene based bituminised water Proofing membrance	Alamathi village Ponneri taluk	492.90	43.00	45	March 1990
9.	Tamil Nadu Petro Products Ltd.	Linear Alkyl Benzene	Manali	18,865.00	1267.00	650	April 1988
10.	Uniorganic Industires Ltd.	Refined Rice bran Oil & Fatty Acid	Kelampakkam village Madurantakam taluk	265.00	66.50	100	August 1988
11.	UB Petro Products Ltd.	Propylena Oxide, Glycol / Polyols	Manali	8100.00	747.50	180	June 1990
	Projects under implementation (Joint Sector Projects)						
12.	Dyna Lamps & Glass Works Ltd.	Lead Glass tubings GLS Fluoresent lamps & shells	Gummidi-poondi	4350.00	554.00	250	July 1992

1	2	3	4	5	6	7	8
13	Sterling Nitro Chemicals Ltd.	Ammonium Nitrate, Nitric acid, Aniline	Manali	12500.00	1200.00	300	End of 1994
	Associate sector Projects						
14.	Singhui Cable Ltd.	Cable Jointing Kite for power and tele-communi-cation cables	SIPCOT Industrial complex, Gummidi-poondi	2035.57	87.80	95	-do-
15.	R.R. Medipharma Ltd.	Intravenous (T.V)Fluids	SIDCO Indl Estate, Alathur	1143.00	49.00	100	January 1993

Executive Director, Tamilnadu Industrial Development Corporation Ltd., Madras - report dated 7 July 1992

APPENDIX-16

Number of Industrial units benefited and amount sanctioned by the TIIC between 1974-75 and 1991-92

Year	*Number of units benefited*	*Amount sanctioned* (Rs.in lakhs)
1974-75	87	261.61
1975-76	74	217.97
1976-77	82	353.73
1977-78	62	217.56
1978-79	27	121.29
1979-80	206	234.39
1980-81	139	345.36
1981-82	376	763.82
1982-83	528	1238.00
1983-84	246	1070.00
1984-85	327	1115.00
1985-86	648	2019.00
1986-87	494	2093.00
1987-88	588	2824.00
1988-89	577	2850.00
1989-90	687	2974.00
1990-91	508	2884.00
1991-92	460	4532.00

Report from the Assistant Manager (E&P), The Tamil Nadu Industrial Investment Corporation Limited, Madras and of the Assistant General Manager (MIS), TIIC.

APPENDIX-17

Number of Rice Mills in the district

(Panchayat Union-wise)

Sl.no.	*Name of the Panchayat Union*	*Number of rice mills established*
1.	Kancheepuram	86
2.	Walajabad	85
3.	Uthiramerur	126
4.	Sriperumbudur	19
5.	Poonamallee	104
6.	Kundrathur	79
7.	Kallankulathur	23
8.	Tirupporur	43
9.	Thirukalukundram	69
10.	Madurantakam	210
11.	Acharapakkam	54
12.	Chithamur	43
13.	Lathur	27
14.	St. Thomas Mount	35
15.	Villivakkam	-
16.	Puzhal	98
17.	Minjur	66
18.	Sholavaram	33
19.	Gummidipoondi	48
20.	Tiruvallur	34
21.	Kadambathur	57
22.	Poondi	65
23.	Ellapuram	50
24.	Tiruttani	33
25.	Thiruvelangadu	39
26.	Ramakrishna Rajapet	12
27.	Pallipet	19
	Total	1557

Hand book on Basic Statistics of Rural Development Department - Rural Development Department - Tamil Nadu.

APPENDIX-18.

District share of output to Total output in Major Industry Groups

1985-86

Sl. no.	Description	Total Output (Rs. in lakh)	District share (Rs. in lakh)	Percentage
1	2	3	4	5
1.	Manufacture of food products	135370	18326	13.54
2.	Manufacture of beverages, tobacco and tobacco products.	14637	3871	26.45
3.	Manufacture of jute, hemp and mesta products	109	59	54.13
4.	Manufacture of textile products	22039	1412	6.41
5.	Manufacture of wood and wood products	1772	284	16.03
6.	Manufacture of leather and leather products	48680	6097	12.52
7.	Manufacture of rubber, petroleum and coal products	184357	153391	83.20
8.	Manufacture of chemical and chemical products.	150849	50011	33.15
9.	Manufacture of non-metallic mineral products.	52301	8679	16.59

1	2	3	4	5
10.	Manufacture of basic metal and alloy inudstries	67324	27782	41.27
11.	Manufacture of metal products and parts except machinery and transport equipment	20089	6033	30.03
12.	Manufacture of electrical machinery, apparatus appliances, supplies and parts	37740	15363	40.71
13.	Manufacture of transport equipments industries	108795	62093	57.07
14.	Manufacture of other manufacturing industries	6261	4644	74.17
15.	Manufacture of sanitary services	151	9	5.96

Chengalpattu-MGR District Statistical Handbook, 1988-89, p.127, Office of the Assistant Director of Statistics, Kancheepuram.

APPENDIX-18 *(Contd.)*

Small Scale Industries - Year ended on 30 June

Sl. No.	Major Groups	1986-87 No.of S.S.I.	1986-87 No.of Emplo-yees	1987-88 No.of S.S.I.	1987-88 No.of Emplo-yees	1988-89 No.of S.S.I.	1988-89 No.of Emplo-yees
1	2	3	4	5	6	7	8
1.	Food & Food products	807	6432	875	7002	947	7506
2.	Beverages & Tobacco	37	381	56	550	64	962
3.	Cotton Textiles	70	700	105	580	125	1200
4.	Wool and Synthetic and Silk Fibre	30	270	44	250	62	310
5.	Jute, Hemp & Mesta products	3	6	8	40	8	40
6.	Textile products	134	4050	175	895	227	977
7.	Wooden products	217	1306	292	1410	378	1840
8.	Paper and paper products	346	3900	351	1755	441	2205
9.	Leather products	199	1791	238	1193	297	1438
10.	Rubber & Plastic products	637	7584	671	4026	769	4614

1	2	3	4	5	6	7	8
11.	Chemical products	602	7000	664	3984	766	4606
12.	Non-metallic mineral products	695	2450	733	3665	803	4015
13.	Basic metal and alloy products	467	4203	376	1890	399	2005
14.	Medical products	1378	11718	1571	7855	1733	8805
15.	Machine Tool Equipments	1402	9840	1612	9672	1704	10824
16.	Electrical Tool Equipments	333	3870	324	1690	371	1925
17.	Transport Equipments	280	2771	313	1700	357	1773
18.	Other manufacturing Industries	199	680	147	1000	170	1098
19.	Repairs and Service units	111	756	270	960	321	1216
		7944	69708	8825	50117	9942	57359

Chengai Anna District Statistical Handbook-1988-89, p.129, Office of the Assistant Director of Statistics, Kancheepuram

APPENDIX-19

Achievements of the Village Industrial Units in the Year 1990-91 (up to March 1991)

Sl. no.	*Name of the unit*	*Annual Target for Production* (Metric Tonnes)	*Production in the year 1990-91* Qty. (M.T)	Value (Rs.in lakh)	*Sales in the year 1990-91* Qty. (M.T)	Value (Rs.in lakhs)
1	*2*	*3*	*4*	*5*	*6*	*7*
I. Soap Unit						
1.	Poondi	108.00	108.032	12.53	99.330	11.50
2.	Arambakkam	96.000	85.000	9.77	90.089	10.36
II. Hand Made Paper Units						
1.	Veera Ragavapuram-Wrapper	-	5.450	0.85	Stationery Sales	
	Card Board	12.000 Per 4 months	14.590	0.47	-	1.53
2.	Mamandur					
	Impression Paper	8000/- per 4 months	4.742	1.08	3732 kg	0.85
	Wrapper	-	3.738	0.32	86 kg	0.01
III. Foot War unit		Rs. in lakh	Pairs			
1.	Kancheepuram	3.50	4197	2.88	4479	30.02
2.	Pammal	5.50	5701	8.02	5774	7.69

1	2	3	4	5	6	7
IV.	Glazed Pottery Unit, Sevvapettai	2.70	-	1.11	-	1.87
V.	Regional Pottery Training Centre, Sevvapettai	0.30	-	0.15	-	0.17
VI.	Foot Wear Show Room Sales Target, Kancheepuram	2.50	-	-	1447	1.15

Particulars collected from the office of the Assistant Director of Khadi and Village Industries, Kancheepuram, dated 13 May 1991

APPENDIX-20

Khadi and Village Industrial Cooperatives in the District

Sl. no.	Name of the Society	Address	Date of Establish-ment	No.of members enrolled at the beginning	No.of members at present	Present capital investment (in Rs.)
1	2	3	4	5	6	7
1.	Swamy Sivananda Multipurpose Cooperative Society	Thiruvothiyur Madras-19	26.6.59	39	56	1,99,195
2.	Thirumazhisai Multipurpose Cooperative Society	Thirumazhisai	24.3.57	25	181	1,58,470
3.	Maduranthakam Multipurpose Cooperative Society	Maduranthakam	16.3.57	35	122	2,35,500
4.	Pallavaram Carpentry Blacksmithy Cooperative Society	Old Pallavaram, Madras-43	24.5.87	16	47	-
5.	Tiruttani Carpentry Blacksmithy Cooperative Society	Tiruttani	13.3.62	17	49	30,00

1	2	3	4	5	6	7
6.	Pallipattu Oil Producers Cooperative Society	Pallipat	14.05.88	28	28	90,000
7.	Chrompet Oil Producers Cooperative Society	Chrompet	27.10.88	36	36	5,000
8.	Avadi Cane Society	Avadi	26.05.83	42	42	—
9.	Pulicat Palm Leaf Society	Pulicat	25.09.59	156	283	97,000
10.	Tamil Nadu Lime Society	Erumpuliyur Tambaram		20	220	—
11.	Kancheepuram Pottery Society	Kancheepuram	10.05.66	35	192	—
12.	Vedapalayam Pottery Society	Vedapalayam	03.07.68	30	55	—

Particulars collected from the office of the Assistant Director of Khadi and Village Industries Board, dated 13 May 1991

APPENDIX-21

Production and Sale of products of the Khadi and Village Industrial Cooperatives

Sl. no.	Yearwise	Production	Sales	No. of beneficiaries	Details of products
1	2	3	4	5	6
1.	1988-89	37,000	43,000	36	1. Backery
	1989-90	40,000	45,000		2. Hand pounding Rice
	1990-91	42,000	48,000		3. Line
					4. Oil etc.
2.	1988-89	1,10,000	10,50,000	55	1. Hand pounding Rice
	1989-90	13,50,000	13,85,500		2. Doordhall and Pulsus
	1990-91	25,21,500	25,65,500		3.Carpentry & Blacksmithy
					4. Lime, Oil, etc.
3.	1988-89	10,50,750	10,68,750	36	1. Hand pounding Rice
	1989-90	12,14,750	12,17,640		2. Bread and biscuit
	1990-91	14,75,000	14,13,650		3. Lime and Oil Other Village Industries.
					4. Masala making etc.

1	2	3	4	5	6
4.	1988-89	14,56,600	14,86,700	26	1. Carpentry articles
	1989-90	27,67,400	12,84,400		2. Blacksmithy articles
	1990-91	30,87,500	31,53,500		
5.	1988-89	4,13,550	4,15,750	25	1. Carpentry articles
	1989-90	5,15,400	4,65,500		2. Blacksmithy articles
	1990-91	6,13,000	4,03,900		
6.	1988-89	1,02,500	1,05,400	20	1. Oil and allied products
	1989-90	3,05,450	3,15,550		
	1990-91	2,54,600	2,57,700		
7.	1988-89	-	-	20	1. Oil and allied products
	1989-90	2,50,000	2,55,000		
	1990-91	8,65,000	7,94,120		
8.	1988-89	75,650	78,750		Cane articles
	1989-90	1,05,650	1,12,750		Steel etc.
	1990-91	2,23,265	2,62,870		
9.	1988-89	1,28,251	1,69,665	97	Palmleaf products
	1989 90	1,40,325	1,71,000	(women)	export articles etc.
	1990-91	1,80,500	2,01,650		

1	2	3	4	5	6
10.	1988-89	1,05,500	1,10,400	15	Lime articles etc.
	1989-90	1,07,000	1,11,500		
	1990-91	1,17,000	1,19,250		
11.	1988-89	2,84,300	3,01,105	120	Pottery, bricks, tiles, paper, toys etc.
	1989-90	4,73,450	5,00,766		
	1990-91	2,62,810	2,84,696		
12.	1988-89	-	-	30	1. Pottery articles
	1989-90	1,12,750	1,13,550		2. Jug
	1990-91	1,22,650	1,25,750		3. Tiles etc.

Particulars collected from the office of the Assistant Director of Khadi and Village Industries Board, dated 13 May 1991

APPENDIX-22

List of Handloom Weavers' Co-operative Societies in the district

1.	Pillaiyarpalayam	Moovendar Weavers'	Cooperative Society.
2.	-do-	Meenakshiamman	-do-
3.	-do-	Kumaran	-do-
4.	-do-	Thakkeswarar	-do-
5.	-do-	Sri Venkateswarar	-do-
6.	-do-	Periyar EVR	-do-
7.	Kancheepuram	Industrial Handloom	-do-
8.	Manampathy	Handloom	-do-
9.	-do-	Kumaran Handloom	-do-
10.	Visoor Handloom	Weavers'	-do-
11.	Padiri Sri Murugan		-do-
12.	Elapakkam Handloom	-do-	
13.	Kayapakkam Jothi Ramalingam Handloom		-do-
14.	Kancheepuram Kambar Silk		-do-
15.	Agaram Duli		
16.	Kancheepuram	Silk Weavers'	Cooperative Society
17.	-do-	Murugan Silk Weavers'	-do-
18.	-do-	Anna Silk	-do-
19.	-do-	Sri Krishna Silk Marketing	-do-
20.	-do-	Tiruvalluvar Silk Marketing	Weavers' Cooperative Society
21.	-do-	Cooperative Handloom Development Project	
22.	-do-	Vallalar Silk Weavers' Cooperative Society	
23.	-do-	Pavendar Bharathidasan Silk Industrial W.C.S.	
24.	Kancheepuram Periyar EVR Silk W.C.S.		
25.	-do-	Relief W.C.S.	
26.	Olimugamathupet Anna Handloom W.C.S.		
27.	Thiruppukuzhi	Anna Handloom	W.C.S.
28.	Muttavakkam	Thiruvalluvar Handloom	W.C.S.
29.	Kancheepuram Sri Arultharum Perumal Silk-*cum*-Cotton W.C.S.		
30.	Veliyur Dr. Kalaignar Karunanidhi Silk-cum-Cotton		W.C.S.
31.	Kancheepuram	Pallavar Silk	W.C.S.
32.	-do-	Navalar Silk	W.C.S.
33.	-do-	Kamarajar Silk	W.C.S.
34.	-do-	Silk Marketing	W.C.S.
35.	-do-	Theerar Sathyamoorthy Silk W.C.S.	
36.	-do-	Kamakshiamman Silk	W.C.S.
37.	-do-	Sri Varadarajaswamy Silk	W.C.S.
38.	-do-	Kalaignar Karunanidhi Silk	W.C.S.

39.	Kancheepuram	Mamallan Silk	W.C.S.
40.	-do-	Mahakavi Bharathiyar Silk	W.C.S.
41.	-do-	C.V.M. Annamalai Silk	W.C.S.
42.	-do-	Annai Kasthuribai Women Silk	W.C.S.
43.	-do-	Sri Jayendrar Silk	W.C.S.
44.	-do-	V.P. Chindan Silk	W.C.S.
45.	Ayyampettai	Kandappar Handloom	W.C.S.
46.	-do-	Murugan Handloom	W.C.S.
47.	-do-	Industrial Handloom	W.C.S.
48.	-do-	Anna Handloom	W.C.S.
49.	Valluvapakkam	Kalaignar Karunanidhi Handloom	W.C.S.
50.	Thimmayanpettai	Mahatma Gandhi	W.C.S.
51.	Serkadu	Handloom	W.C.S.
52.	Ekanampettai	Handloom	W.C.S.
53.	Ayyanpettai	Thiruvalluvar Handloom	W.C.S.
54.	Seeyamangalampettai	Handloom	W.C.S.
55.	Naickenpettai	Handloom	W.C.S.
56.	Palayasivaram	Annai Sathya Handloom	W.C.S.
57.	Thirumukkudal	Handloom	W.C.S.
58.	Orakkattupettai	Anna Handloom	W.C.S.
59.	-do-	Tiruvallur Handloom	W.C.S.
60.	Desumugipettai	Handloom	W.C.S.
61.	Kanakoilpettai	Handloom	W.C.S.
62.	-do-	Varsakthi Vinayagar Handloom	W.C.S.
63.	Nalvarkoilpettai	Handloom	W.C.S.
64.	Mangalam	Vedagiriswarar Industrial Handloom	W.C.S.
65.	Polambakkam	Tiruvalluvar Handloom	W.C.S.
66.	Manampathy	Tiruvalluvar Handloom	W.C.S.
67.	-do-	Kambar Handloom	W.C.S.
68.	Kanakoilpettai	Bharathiyar Handloom	W.C.S.
69.	Desumugipettai	Bharathiyar Handloom	W.C.S.
70.	Sembakkam	Tiruvalluvar Handloom	W.C.S.
71.	Melvalampettai	Handloom	W.C.S.
72.	Thirukalikundram	Women Industrial	W.C.S.
73.	-do-	Dr. Kalaignar Karunanidhi Powerloom	
74.	Saidapet	Handloom	W.C.S.
75.	-do-	Jothi	W.C.S.
76.	Kunrathur Sekkilar	Handloom	W.C.S.
77.	Thirunageswaram	Handloom	W.C.S.
78.	Melpadappai	Kamakshiamman Handlooms	W.C.S.
79.	Padirvedu	Handloom	W.C.S.
80.	Kunrathur	Arulmigu Kamakshiamman Handloom	W.C.S.

81.	Melpadappai		Handloom	W.C.S.
82.	Kunrathur Kalaivanar Industrial		"	"
83.	Thirumazhisai Alwar		"	"
84.	Thirupur Kumaran		"	"
85.	Arni Jeeva		"	"
86.	Kosavanpettai Mahakavi Bharathiar		"	"
87.	Melpadappai Kolantheeswarar		"	"
88.	Nanthivaram Guduvancheri		"	"
89.	Anagaputhur Agatheeswarar		"	"
90.	Real Madras Handkerchief		"	"
91.	Mandaiveli		"	"
92.	Washermenpet Periyar "			"
93.	Kodambakkam Sri Meenakshi		"	"
94.	Dr. Radhakrishnan		"	"
95.	Choolai Anna		"	"
96.	Vysarpadi Vyasar		"	"
97.	New Gummudipoondi Thirumalai		"	"
98.	Mylapore Sri Velliangiri Vinayagar		"	"
99.	Saidiababeh		"	"
100.	Ammiyarkuppam Kannappanar		"	"
101.	-do-	Anna	"	"
102.	-do-	Shakkur	"	"
103.	Ammiyarkuppam	Thirumurugan	" "	
104.	-do-	Moovendar	"	"
105.	-do-	Saravanan	"	"
106.	-do-	Mahatma	"	"
107.	-do-	Thiruvalluvar	"	"
108.	-do-	Kamarajar	"	"
109.	-do-	Sankar	"	"
110.	-do-	Kalaignar	"	"
111.	-do-	Anna Industrial	"	"
112.	-do-	Periyar	"	"
113.	-do-	Bharathidasan	"	"
114.	Srikalikapuram	Selvavinayagar	"	"
115.	-do-	Thanthai Periyar	"	"
116.	Balapuram		"	"
117.	Rajanagaram		"	"
118.	R.K. Pet Velmurugan	"	"	"
119.	-do-	Anna	"	"
120.	Buchireddipalli	Selvavinayagar	"	"
121.	Srikaligapuram	V.O.C.	"	"
122.	-do-	Pallavar	"	"

123.	Buchireddipalli	Mahatma	Handloom	W.C.S.
124.	Rajanagaram	OM Murugan	"	"
125.	-do-	Raghu	"	"
126.	Buchireddipalli	Thanigai Murugan	"	"
127.	Janakarajakuppam	Arignar Anna	"	"
128.	Buchireddipalli	Anna	"	"
129.	Mahankalikapuram	Annai Sathya	"	"
130.	Srikalikapuram	Mahakavi Bharathiyar	"	"
131.	R.K. Pet Kumaran		"	"
132.	Vanganoor Parthasarathy		"	"
133.	-do-	Nehru	"	"
134.	-do-	Sanjai Gandhi	"	"
135.	-do-	Kalaignar	"	"
136.	-do-	Anna	"	"
137.	-do-	Thanthai Periyar	"	"
138.	-do-	Kamarajar	"	"
139.	-do-	Mahatma Gandhi	"	"
140.	-do-	Sri Balaji	"	"
141.	Sanjeevipuram Sankar		"	"
142.	Maddur Anna		"	"
143.	-do-	Kamarajar	"	"
144.	-do-	Periyar	"	"
145.	-do-	Ganapathy	"	"
146.	Sorakayapet		"	"
147.	-do-	Ganapathy	"	"
148.	-do-	Thirumurugan	"	"
149.	Sorakayapet	Kothandarama	"	"
150.	Kolathur	Thirumurugan	"	"
151.	Bommarajapet	Kumaravel	"	"
152.	Korakkuppam	Saraswathi	"	"
153.	Nallavanampet	Balaji	"	"
154.	Konasamuthiram	Thiruvalluvar	"	"
155.	Melapudi Sakthi Ganesar		"	"
156.	Amudhareddi Kandigai Perarignar Anna		"	"
157.	Podatturpet Jothi Krishna		"	"
158.	Podatturpet Kanchi		"	"
159.	-do-	Arignar Anna	"	"
160.	-do-	Tiruvalluvar	"	"
161.	-do-	Mahatma	"	"
162.	-do-	Madam Santhi	"	"
163.	-do-	Kamarajar	"	"
164.	-do-	Jagadambigai	"	"

165.	-do-	Pudur Karthikeyan	Handloom	W.C.S.
166.	-do-	Kambar	"	"
167.	-do-	Kannadasan	"	"
168.	-do-	Periyar	"	"
169.	Athimanjeripet	Babuji	"	"
170.	-do-	Mangalamkizhar	"	"
171.	-do-	Mahakavi Bharathiyar	"	"
172.	Athimanjeripet	Periyar EVR	"	"
173.	-do-	Thiru-vi-ka	"	"
174.	-do-	Sundareswarar	"	"
175.	-do-	Arignar Anna	"	"
176.	Venkatarajakuppam	Venkateswara	"	"
177.	-do-	Kamarajar Industrial		"
178.	Vilakanampoondi	Pudur	"	"
179.	Podatturpet	Sri Moogambigai	"	"
180.	-do-	Bharathamatha	"	"
181.	Athimanjeripet	Kamashi	"	"
182.	Kancheepuram Silk Twisting Industrial Cooperative Society.			

Assistant Director of Handlooms and Textiles, Kancheepuram, report, dated 13 May 1991

APPENDIX - 23

Area under Mulberry Cultivation in the district

Year	*Area under Mulberry* (in acres)
1983-84	0236.50 (area at the beginning)
1987-88	0479.10 (area in the subsequent years)
1988-89	0629.55
1989-90	0716.00
1990-91	0848.00
1991-92	1050.00
1992-93	1177.00
1993-94	1290.00

Number of families engaged in Sericulture activities in the district

Employment Generation

Year	*No. of families benefited*
1983-84	1180
1987-88	2395
1988-89	3145
1989-90	3580
1990-91	2640
1991-92	3120
1992-93	2860
1993-94	2795

Assistant Director of Sericulture, Kancheepuram, report dated 2 March 1995

APPENDIX - 24

Achievements of the Tamilnadu Cooperative Silk Producers' Federation Limited, Kancheepuram, for the years 1978-79 to 1991-92 (up to August 1991)

S.no.	Year	Target fixed for the year (Kg. in lakhs)	Purchase of Silk: Quantity purchased (Kg. in lakhs)	Value (Rs. in lakhs)	Achievement in percentage (%)	Sales of Silk: Target fixed for the year (Kg. in lakhs)	Quantity sold (Kg. in lakhs)	Value (Rs. in lakh)	Achievement in percentage (%)
1.	1978-79	NIL	0.16	44.72	—	—	0.13	39.80	—
2.	1979-80	NIL	0.54	191.56	—	—	0.52	196.01	—
3.	1980-81	NIL	0.82	203.89	—	—	0.87	271.83	—
4.	1981-82	NIL	0.80	315.97	—	—	0.84	315.99	—
5.	1982-83	NIL	0.52	225.66	—	—	0.32	156.99	—
6.	1983-84	NIL	0.75	333.36	—	—	0.85	376.81	—
7.	1984-85	NIL	1.05	505.23	—	—	1.05	511.30	—
8.	1985-86	1.25	1.14	612.94	91.45	1.25	1.11	600.52	88.57
9.	1986-87	1.25	1.66	897.65	144.51	1.15	1.61	900.81	140.35
10.	1987-88	1.35	1.68	1,040.62	124.35	1.35	1.76	1,084.81	130.20
11.	1988-89	1.50	1.87	1,436.89	124.50	1.50	1.85	1,448.83	123.48
12.	1989-90	1.65	2.59	2,194.36	156.75	1.65	2.58	2,202.78	156.66
13.	1990-91	2.50	3.84	3,532.22	153.22	2.50	3.92	3,630.37	156.37
14.	1991-92	3.30	4.06	5,752.63	123.08	3.30	4.04	5,747.91	122.38

Administrator, Tamil Nadu Co-operative Silk Producers' Federation Limited, Kancheepuram, dated 2 July 1992, report dated 10 October 1991

APPENDIX-25

Particulars of Production and Sales of Zari produced by the Tamil Nadu Zari Ltd., for the period from 1973 to 1989-92

Year	*Production* (in Marcs)	*Sales*	*Profit / Loss* (Rupees in Lakhs)
1973	459	456	(-) 0.97
1974-75	1535	1530	(-) 1.79
1975-76	1172	1044	(-) 2.78
1976-77	1784	1902	(-) 3.40
1977-78	1411	1426	(-) 3.82
1978-79	1640	1645	(-) 3.54
1979-80	2540	2323	(-) 2.06
1980-81	5215	5237	(-) 3.30
1981-82	8626	8607	(-) 0.89
1982-83	10561	10522	(+) 3.59
1983-84	10460	10585	(+) 7.04
1984-85	5115	5165	(+) 0.65
1985-86	12453	12462	(+) 2.63
1986-87	14417	14417	(+) 1.80
1987-88	14500	14500	(+) 6.84
1988-89	8408	8171	(+) 1.41
1989-90	14494	14679	(+) 6.20
1990-91	16092	15647	(+) 0.23
1991-92	17666	18569	(+) 4.23 *

* Tentative

Selling Price Rs.2431 per Marc.

Share Capital = 13.20

Debentures = 14.97

Cash Credit = 8.00

Source : Managing Director, Tamil Nadu Zari Ltd., Kancheepuram, reports dated 11 October 1991 and 1 July 1992

APPENDIX - 26

Name of the Unit in the SIPCOT Industrial Estate, Gummidipoondi foreshowing details of product manufactured by the Units, Extent, Project Cost, Employment Potential, Power and Water Consumption.

S.no.	*Name of the Unit*	*Products manufactured*	*Extent* (in acres)	*Project cost* (Rs. in lakhs)	*Employ-ment*	*Power KVA*	*Water* (in gallons)
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Ambika Wood Industries Mill	Wood Products	1.20	3.250	10	46	200
2.	Kanchayi Rubber Co.,	Rubber Compound	2.50	95.000	40	515	12000
3.	Vigna Oil Mills, Private Limited.	Ref. Veg. Oil	4.39	40.000	49	130	—
4.	Mod Shoe Co-op. Ltd.	Foot Wear	1.50	33.180	143	180	3790
5.	Chemech Lab	Bio-Diagnostics	2.00	96.470	200	120	3100

Project Officer, SIPCOT Industrial Complex, Gummidipoondi, report dated 5 February 1991.

1	2	3	4	5	6	7	8
6.	Sri Krishna Metallurgicals	Steel Castings	1.04	24.000	30	400	2500
7.	Venkateswara Conducts	Prec. Tubes	1.51	45.000	125	250	200
8.	Vipanx India P. Ltd. Chemical	Leather	1.61	17.940	9	—	1500
9.	Kaayal Chemicals Private Ltd.	Met. Stearates	2.03	15,300	26	40	1000
10.	Lite Containers Private Ltd.	LPG Cylinders	5.02	89,490	138	430	2000
11.	VJS Automotive Electron	Electrical Accessory	1.00	90,500	106	100	500
12.	KRN Fabricators Private Ltd.	Pressure Vessel	1.48	35,480	55	250	400
13.	Venkateswara Cylinders	LPG Cylinders	4.35	95,000	218	250	2500
14.	Sri Roudra Metal Forgings-Steel	Steel-Forgings	1.00	25.510	—	—	200
15.	Super Granite Polish	Granite	1.00	8.350	24	80	200

1	2	3	4	5	6	7	8
16.	Montech Hydraulic P. Ltd.	Hydraulic Cylinder	2.57	123.500	380	250	2000
17.	Kamala Fibre Mould P. Ltd.	SMC Components	1.15	17.750	20	40	500
18.	Digital Date Forms P. Ltd.	Comp. Stationery	3.56	66.000	30	110	500
19.	TN Air Products	Med/Indl. Oxygen	1.67	45.000	34	250	1650
20.	Karnatic Rexine	PVC/Rexine/Foam	2.02	59.000	57	80	1000
21.	Dora Concrete Components	Wall/Floor Tile	1.28	38.000	30	10	500
22.	Krall Ribbons	Krall Ribbons	1.00	8.730	—	10	100
23.	Continental Coating	Paints	2.94	57.000	120	100	1000
24.	Premier Pressure Pipes	AC Prec. Pipes	4.78	57.200	140	105	2000
25.	Omega Feed & Nutrients	Poultry Food	2.75	42.370	91	200	500
26.	Vijay Plasweaves P. Ltd.	HDPE Sacks	1.00	21.00	69	100	170
27.	Automotive Coaches	Fronted Struct	20.32	295.00	500	950	5000
28.	TN Graduate Fishermen	Fishnet	1.00	150.00	90	55	500

1	2	3	4	5	·6	7	8
29.	R.K.K.R. Steel Ltd.	M.S. Ingoda	10.85	200.00	230	5000	5000
30.	Asmarox P. Ltd.	Indl./Med. Oxygen	5.00	88.000	—	300	2240
31.	Kunal Machinary MERS. Ltd.,	Textile Machine	18.01	100.00	315	500	4000
32.	Sahu Cylinder & Udyogpl	LPG Cylinder	9.99	119.400	—	—	6000
33.	Sakthi Steel Casting	Alloy Steel Cast	1.00	33.000	50	500	1800
34.	Ramal Alloy Steel Ind. P. Ltd.	Alloy Casting	1.04	29.900	50	282	500
35.	Contronics	Electronic Timer	1.00	57.000	—	—	500
36.	Austral Plastic P. Ltd.	Sheet Moulding	1.04	64.500	50	110	400
37.	Giriraj Engg. India P. Ltd.	Pipe Fabrication	2.34	8.300	40	50	400
38.	Ergodyne (P) Ltd.	Steam Gen.	10.56	154.000	460	1000	4000
39.	Gajalakshmi Enterprises	Bricks, Mosaic	3.75	9.000	85	—	3250
40.	Nega Foundry P. Ltd.	Alloy Casting	6.00	193.000	290	1500	2600
41.	Southern Indl. Packages	HDPE/PPWOV, Sack	3.71	18.000	—	50	500
42.	Pearl Biscuits & Confect	Biscuits	2.72	45.390	14	200	1200

1	2	3	4	5	6	7	8
43.	Madras I.N. Engg. Products	JET, Mini Pumps	1.04	10.400	20	25	200
44.	Devi Silicates (P)	Sodium Silicate	1.22	7.400	26	10	500
45.	Southern Auto Casting	Alloy Casting	1.00	12.360	30	100	500
46.	Autolec Inds. P. Ltd.	Fuel Pumps	3.31	59.000	62	100	600
47.	Kumaragiri Steel Ltd.	Steel Castings	4.82	75.500	100	1000	4000
48.	Magnatherm Alloys (P) Ltd.	Alloy Steel Cost	6.48	88.460	80	600	3000
49.	Kumagin Electronic Ltd.	Plastic Films	1.94	160.000	56	150	1000
50.	Kamachi Moulded Packagings	EFF Boxes	2.85	70.570	56	250	1500
51.	Press Cast Ltd.	DIE Casting	1.52	43.310	—	65	500
52.	Naveen Oil Mills	Crush Edible Oil	1.00	12.000	—	100	500
53.	Sunshine Abrasive Product	Emery Paker	1.00	8.550	27	45	500
54.	Coramendal Reclaim	Reclaimed Rubber	1.76	30.790	42	200	600
55.	D.R. & Sons	Fabricated Item	1.00	3.100	31	20	300

1	2	3	4	5	6	7	8
56.	Venkateswara Steels	Steel Castings	1.00	14.900	27	800	5000
57.	Vinit Polytex (P) Ltd.	HDPE Woven Sack	1.00	20.800	—	150	333
58.	Team Work Trading Co. (P) Ltd.	Nylon Thread	1.00	34.000	87	77	500
59.	Easy Weld Electroded (P) Ltd.	Weld Electrodes	2.00	120.700	100	250	5000
60.	Madras Lamps (P) Ltd.	Flourescent Lamp	1.11	29.280	42	63	2500
61.	Aksa Poly Begs P. Ltd.	HDPE/PPWOVENSAL	1.21	28.800	—	120	500
62.	Space Tech Plastic P. Ltd.	PVC Pipes	1.02	60.000	28	200	500
63.	Nortan Polymers	HDPE WOVENSAC	1.00	32.900	—	—	500
64.	Nuage Packaging (P) Ltd.	HPDE Sacks	2.00	88.000	59	315	800
65.	Mookambikai Die Castings	Alum. Die Cast	1.06	25.830	12	90	500
66.	Rambo Packers India P. Ltd.	HDPE Woven Sack	1.00	80.000	80	200	500
67.	Excel Offset P. Ltd.	Computer Station	1.00	123.000	14	200	100
68.	Indrad Auto Components	Auto Ancillary	10.00	800.00	400	1600	5000
69.	Sumangala & Fuchs	Water Coolfurnac	5.00	48.350	48	130	50

1	2	3	4	5	6	7	8
70.	Aroma Organix	Ethyl Acetate	0.98	24.050	35	250	500
71.	Bharadwaj Electro Co.	Multisec. Capacity	1.13	62.350	59	120	300
72.	Sumangalam Steel P. Ltd.	Steel Castings	5.58	151.000	86	4400	2900
73.	Peacock Polymers	HDPE/PP Bags	3.19	96.000	59	180	500
74.	Indrad Auto Components	Auto Axcillary	9.15	200.000	100	200	5000
75.	Elpec Components Ltd.	Elec. Capacitor	1.38	46.000	—	—	1200
76.	Fabcon Engg. P. Ltd.	Chem. Plant equp	2.20	21.000	45	100	200
77.	Fabcon Engg. P. Ltd.	Chem. Plant equp.	2.20	31.000	45	100	200
78.	Infotech P. Ltd.	Mini Computers	2.00	187.000	312	75	500
79.	Orient Oxygen (P) Ltd.	Manufacture of Oxygen	3.97	85.500	31	250	2000
80.	Tekform Engg. P. Ltd.	Nuts and Spares	5.12	205.000	72	250	200
81.	Pet Indl. Consumer Package	Pet Bottles	1.00	100.000	42	190	300
82.	Britam Flo Technologies	Centifugal Pump	1.18	62.530	37	75	400
83.	Sukra Diamond Tools P. Ltd.	Diamond Tools	1.81	118.000	53	222	1000
84.	Devson Decords P. Ltd.	Flush Doors	2.07	—	46	100	1000

1	2	3	4	5	6	7	8
85.	Arun Pipes Ltd.	PVC Pipes	3.03	75.000	30	80	1000
86.	PS PL Pavane Shoes P. Ltd.	Shoe Upper	1.38	71.700	96	37	700
87.	Fometa P. Ltd.	Fibre Glass Roin	3.52	180.000	230	2000	5000
88.	T.N. Veneer P. Ltd.	Veener	2.00	54.600	47	1200	1000
89.	Nortan Electrical Industries	Wire, Cable	1.07	25.000	28	81	500
90.	Forbes Ewart and Figgies	Rubber Process	3.23	100.000	35	500	1100
91.	Aoons Construction Products	Concrete Block	4.00	95.510	37	200	2000
92.	Madras Industrial Linings Ltd.	Poly Tetraflird	1.31	268.000	60	330	4000
93.	Suryodeya Plastics	IM for TV Cabs	2.56	158.750	58	250	1200
94.	Packwell Thermoplast P. Ltd.	Plastic Granules	1.00	19.750	10	87	500
95.	Asia Tobacco Co. Ltd.	Shoe Uppers	2.94	—	—	—	1500
96.	Madras Hydralic Hose P. Ltd.	Industrial Hoses	4.45	200.000	20	500	4000

1	2	3	4	5	6	7	8
97.	Tamil Nadu Glass Works Ltd.	Glass Container	5.43	322.560	161	800	1000
98.	Century Safety Glass	Ind. Tough and Glass	2.04	55.000	25	—	—
99.	Southern Gas Fittings	PVC Pipes	4.68	50.000	75	250	1000
100.	Tamil Nadu Edible Oil	Refined of Edible Oil	2.79	40.000	42	110	3000
101.	Snowcem India Ltd.	Snowcem Sentex	1.97	86.500	—	200	1000
102.	Southern Pneumatic Rock	Wellrigwagondri	2.19	71.000	—	150	500
103.	Aarthy Polymens	Punches and Films	1.00	20.000	14	50	500
104.	Mathi Engg. Works	Sheet Metal/Fab	1.00	5500	11	75	120
105.	Nortan Intech Rubber P.L.	Peclaimed Rubber	4.15	121.400	30	600	1000
106.	S.P. Oil Mills Ltd. (P)	Edible Oil	2.21	96.000	126	110	1200
107.	Standard Oxygen (P) Ltd.	Oxygen	1.70	41.850	30	75	400
108.	Coramandel Batteries P. Ltd.	Storage Battery	1.00	28.000	37	100	350
109.	Alchlor Industries	Almn. Chloride	2.06	24.000	18	20	1000

APPENDIX - 27

The installed capacity of the Lucas-TVS Limited, on the basis of double shift/production as on 31 March 1991

Sl. no.	*Items of products*	*Installed capacity nos.*	*Production nos.*
1.	Starters	242000	378898
2.	Generators	242000	446672
3.	Regulators	650000	508951
4.	Head Lamps	450000	183197
5.	Flashers	120000	153000
6.	Distributors	250000	180910
7.	Horns	110000	75850
8.	Screen Wipers	250000	248511
9.	SOL Switches	70000	41555
10.	Horn Relays	51000	-

Assistant Manager (Personnel) Lucas-TVS Ltd., Padi, report dated 24th June 1992.

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CHAPTER - 6

BANKING, TRADE AND COMMERCE

Banking and Finance

Economic prosperity of a nation is gleaned from the agricultural production, industrial development and progress in the fields of Banking, Trade and Commerce. In ancient times, the institution of Banking existed in its primitive form and in course of time, its activities expanded to serve the society in greater dimensions. From this time onwards, the banker has become an indispensable member of the Indian Society. His importance was not felt in earlier times, when self-sufficiency was the rule of the land. The introduction of division of labour, however, brought in its wake the use of money without which, there was a peculiar complexity and trouble in the matter of exchanges. Money economy, in its turn, could survive without the institution of banking for any considerable time.

There is also much of evidence to show that even prior to the advent of occidental ideas, India was not a stranger to the conception of banking. Vedic literature mentions about debt (Rna) which existed even from Rig Vedic times. This might have been a normal condition among the Vedic Indians. Reference is often made to debts contracted at dicing. To pay off a debt was called *Rnam Sam-ni*. Sometimes, allusion is made to debts contracted without intention of payment. This clearly indicates that giving and taking of credit in one form or other must have existed as early as the Vedic period. However, the transition from money lending to Banking must have occurred by passage of time. Manu, the exponent of Hindu Law, devoted a special section to the subject of "Deposits and Pledges", where he says *A sensible man should deposit his money with a person of family of good conduct, well acquainted with the law, wealthy and honourable.* He further gives us rules which governed the policy of loans and fates of interest. Dr. Pramath Nath Bannerjee in his book *Public Administration in Ancient India* quotes from Gautama, Brihaspati and Budhayana, verses regarding the regulation of the rates of interest. Further more, reference is also made to the same in Kautilya's Arthasastra. Yet, banking in those days meant largely money lending though certain functions of modern banks were not unknown to the bankers of those days[1].

In later times in Tamil Nadu, temples played a notable role in the sphere of economic activity. History reveals that Hindu temples had always been serving as fortresses, treasuries, court houses, parks, fairs, exhibition sheds, halls of learning and of pleasure, all in one. The temple had always been an active centre of social and economic life of its neighbourhood. It is because of this important reason that the kings and their chieftains, the village assemblies and the people were so constantly pre-occupied with the temple and its affairs[2].

During the Pallava rule, the temples in the Chengalpattu region were humming with religious, social, cultural and economic activities. The compulsory contribution of grain for a temple or chatram was known as *maganmai* or *magamai*. This compulsory charity was known and practised in the Pallava age as is evidenced from Nandivarman Pallavamalla's inscription from Ulatur, which refers to a tax called *Magamai*. This proves that the temples during the later Pallava days were functioning as important economic institutions to which the villagers could turn for help at times of famine, floods and economic depression[3]. The temples had a treasury which served mostly the purpose of a bank. They also lent money to private bodies and village assemblies with or without security. As the biggest landowners in the locality, they looked after the interests of agriculturists in the area. Cultivators borrowed money from temple treasury for carrying on their cultivation. Also, the parents took loans to meet the expenses of the marriage of their daughters and for other useful purposes[4].

On many occasions, money was lent to private persons obviously for some important purposes. If the parties who borrowed money from the temple treasury were not able to repay the loan, they sold as much of land as was necessary to wipe off the debts. The peasants too were very often helped by the temples. The temple treasury went to the rescue of the ryots, by selling a portion of the temple land and utilising it for the repairs of the village tanks which breached and were not repaired by them due to paucity of funds[5].

The trustees of the temples acted as judges and decided cases. This is referred to by a few inscriptions. Rules and regulations were also periodically framed for the transaction between the temples and the people. The temple authorities made regulations regarding the mortgage of the temple lands. Thus, a record at Chintamani in the South Arcot district registered an agreement between Koneti Ayyangar, the agent of Ubhayavedantacharya, Ettur Tirumalai Kumara Tatha Charya, the greatmen of Madurantakam at Chengalpattu region and the temple treasurers that the devadana lands which had been released from mortgage during the regime of Koneti Ayyangar, should not be mortgaged again under any circumstances[6].

In mediaeval times too, temple treasury served as a local bank and helped the people at times of distress[7]. As followed in modern times, the personal credit of the borrower was very much taken into account for the grant of loans. Besides such loans to the individuals, the temples lent money to the village assembly also which was the architect of rural development[8].

A large number of Pallava and later Chola inscriptions record gifts to various temples in the Chengalpattu region. It is interesting to note that inscriptions of the later Chola period give much details of credit instruments like promissory notes and the rate of interest etc. Loans were often borrowed in kind. The rates of interest varried from 12 per cent to 15 per cent and they were expressed in terms of commodities when loans were taken in kind.

The public confidence enjoyed by the Indian banker can well be understood from the fact that his hundis (inland Bills of exchange) dates far back as the days of Mahabharata. The word *hundi* is said to be derived from the Sanskrit root *hundi* meaning *to collect.* Its derivation expresses the purpose for which originally such instruments were used. Even in modern times, Bills of Exchanges are generally used for the collection of debts.

Though strangers to the use of paper money, the Hindus were accustomed to the use of hundis from very ancient times. Among them, the banking business was confined to the issue and discount of Bills of Exchange, money lending and money changing. Very often banking business was carried on along with dealings in grains, cloth etc., or with agency business.

Joint Stock banking was first introduced in India by the agency houses whose primary concern was trade.Like the indigenous bankers, the agency houses combined banking with general trading and " in fact they were shopkeepers, proprietors of breweries, tanneries, distilleries, cotton, flour and saw mills. Most of the agency houses were organised by foreigners employed in civil or military services in India. Some of them with aptitude for commercial pursuits, resigned from their official positions and started new firms. There was a large number of such agency houses in India - some of them with sizeable business - though only in a few cases, the trading part of their business was separated from the banking operations[9]. The banker played an important role in the commercial markets as well as in agricultural circles. Also the hundi system was the backbone of all commercial transactions. The transfer of funds from one place to another, took place with the help of the hundis[10]. In general, the agriculturist has to depend on the banker for financial assistance and this practice continues even today in the Chengalpattu MGR District. Of course, the farmers are lent by pawn brokers at exorbitant rate of interest[11].

In modern times, the banking institutions have enlarged their activities to a greater extent. Sometimes, these institutions are carried on by the moneyed people in their respective areas through certain fixed norms. In fact, these indigenous bankers are responsible for greater mobility in financial transactions and also for the development of economy in their regions.

The Indian Central Banking Enquiry Committee in its report has drawn the attention to an indigenous banker as an individual or private firm which, in addition, to making loans either receives, deposit or deals in hundis or both and money lender as an individual or private firm which makes loans or deals in hundi but does not usually receive deposits[12].

Chengalpattu region had been an active centre of banking activity from ancient times. In modern times in this district, two agencies of indigenous banking are found. They are money lenders and pawn brokers whose main functions are to lend money. Some of them accept deposits also. However there is not much difference between the money lender and pawn broker

except the fact that a money lender gives loan either on security or sometimes without security, whereas a pawn broker lends only on security. They meet the needs of agricultural credit and credit for social needs or for general needs.

Another important group of money lenders were the Nattukkottai Chettiars who were indigenous bankers in South India, particularly in Tamilnadu. They were noted for their high organisational quality. Dr.L.C.Jain observes that Nattukkottai Chettiars were the most perfectly organised indigenous bankers. According to him, the Marwaris, Jains and Nattukkottai Chettiars were the representatives of the highest development of indigenous banking in India[13].

The Nattukkottai Chettiars transacted business all over Tamilnadu and at one time, they had flourishing business in SriLanka (Ceylon), Myanmar (Burma) and Malaysia also. But, the entry of Multanis in South India had reduced the volume of business of Nattukkottai Chettiars. Unlike Multanis, Nattukkottai Chettiars carried on only localised business. Even today, they accept current and fixed deposits, honour cheques, receive valuables and documents for safe custody and lend against gold jewels. The common forum of organisation among the indigenous bankers of Nattukkottai Chettiars is partnership. For their business, Nattukkottai Chettiars accept deposits also from their friends and relatives. Like Nattukkottai Chettiars, Kallidaikurichi Brahmin Bankers were also carrying on their banking business in the southern parts of Tamil Nadu. But, in Chengalpattu district, probably they do not have a flourishing transaction due to the domination of Money lending Chettiars and.other banking institutions.

Money lenders and Pawn Brokers are the two great forces playing a dominant role in the financial needs of the lower and middle income groups. The rate of interest charged by the money lenders and Pawn Brokers vary from 24 percent to 36 percent simple interest per annum. Gold and Silver ornaments, brass vessels and other household articles are the variety of things pledged by the people of this district.

Pawn Brokers are stipulating one year time from the date of pledge to redeem the articles pledged with the interest and sometimes they grant seven days after one year as grace time for the purpose. In the case of money-lenders, they are granting three instalments within 100 days from the date of pledge to redeem the pledged article with interest. The pledged articles which are not redeemed within one year and 7 days, are sold in auction in terms of Tamilnadu Pawn Brokers Act 1954 and Money-lenders Act 1954.

Government are regulating the activities of money-lenders and pawn brokers through Tamil Nadu Money Lenders Act 1954 and Tamil Nadu Pawn Brokers Act 1943 respectively. These Acts are amended every now and then to step up such regulation. The licencing authority for the money lenders and Pawn brokers is the Tahsildar of the taluk concerned. The appellate

authority is the Revenue Divisional Officer / Sub Collector / Assistant Collector. The licence is valid for one year and it is renewed by the licencing authority, every year. The details of money lenders and pawn brokers in various taluks are given in *Appendix I.*

The reports of the Tahsildars of the taluks reveal that unlike money lenders, the pawn brokers play a predominant role in meeting the financial needs of the villagers. Eventhough, they charge exorbitant rate of interest, people still depend on these pawn brokers simply because they have easy access to these pawn brokers and are able to secure finance with least possible delay. Now that, the commercial banks and cooperative banks have simplified the norms for issue of loans to the people as a first step, in this move, there is ample scope for the people to best utilise this opportunity and avail of the concessions extended by these banks to the extent necessary.

Development of banking Institutions in modern times

In modern times, the banking institutions have begun to grow steadily. Banking, as existing today, is the result of progressive evolution. As indicated earlier, money lenders were the oldest original bankers. Development of modern banking in India can be traced from the advent of European merchants, particularly from the days of the East India Company.

Leading Agency House of M/s.Alexander & Company started the Bank of Hindustan in 1771. Later in 1784, the Bengal Bank was founded and this was not connected with any agency house. In 1786, the General Bank of India was established as the first Joint stock bank. East India Company started the Bank of Bengal in 1806, the Bank of Bombay in 1840 and the Bank of Madras in 1843. They were presidency banks and some of the Central banking functions were assigned to them. By 1894, There were 14 joint stock banks mostly run by the Europeans[14].

In the first phase of banking development, Commercial banks combined trading activities with banking operation. Their cheques were as good as legal tender and therefore, the failure of bank spelt disaster not only to the depositors but also to all holders of other cheques. They were extremely vulnerable to panics and defalcations. The crisis of 1829-33 was precipitated by the combination of banking with trading business and speculation. It may be pointed out that the development of banking during this period was mostly in accordance with the *laissez faire* policy pursued by the government in all economic matters.

The second phase in the development of banking in India may be said to have started with the introduction of the principle of limited liability and the formation of joint stock companies. The principle was introduced first in England in 1858 and was applied to joint stock banks in India in 1860 according to Act VII of that year[15].

Between 1870 and 1894, seven new banks were started out of which four survive, the most important being the Oudh Commercial Bank registered in 1881 with head office at Faizabad. The People Bank started in 1901, had nearly 100 branches and deposits of over Rs.1.25 crores at the time of the liquidation in 1913[16].

At the fag end of the 19th century, significant development took place in the field of banking. The Swadeshi Movement led to the establishment of banks owned and run by Indian capital and management. The Punjab National Bank Limited was the first bank in this chain founded in 1895. With the dawn of 20th Century, more banks came into being with Indian Capital and management and they are the Bank of India Limited in 1906, the Indian Bank Limited in 1907, the Bank of Baroda Limited in 1908, and the Central Bank of India Limited in 1911.

Many other banks also began their activities with substantial capital. The three Presidency banks were amalgamated in 1928 with the Imperial Banks of India. In 1939, there were about 1500 joint stock banks. Some of these were tiny institutes and so they were later liquidated owing to their non-viability. Some others were amalgamated with other bigger banks. This was how, organised banking was taking roots at trading centres to cater to the needs of growing trade and commerce.

However, the rural areas had a different set up, where the indigenous money lenders continued to be the bankers in need. Since these money lenders had vital monopoly in supplying the credit in rural areas, the poor were often subjected to exploitation, with the overriding monopoly of the money lenders, who often resorted to usurious practices of levying exorbitant rate of interest. The poor villagers could not escape from the clutches of these indigenous bankers as they were the only source of credit of all types of requirements of production and consumption. The condition of the poor peasantry, was perpetually so pathetic and the adage "they were born in debt, they live in debt and die in debt" was the usual phenomenon of their plight.

In the pre-Independent period, most of the small money lenders in Chengalpattu M.G.R. district carried on an unscrupulous transaction with the people. Their transactions were generally with small cultivators and traders. They levied higher rates of interest but seldom they financed for trade. The money lenders still play a role in financing the agriculturists especially those in the lower strata, with advances in cash and kind. The number of these money lenders cannot however be ascertained. In most cases, the terms of lending adversely affect the poor cultivators.

To mitigate the sufferings of the poor farmers, the infrastructure of co-operative credit was brought into being in the matter of agricultural finance. The All India Rural Credit Survey Report revealed that the share of institutional agencies (Co-operative banks and Commercial banks) in financing the

borrowings of the rural household was 71 per cent in 1951-52 whereas the corresponding share of the village money lenders (excluding relatives, friends, traders, commission agents, landlords etc) was as high as 68.6 per cent.

The Commercial banks on the other hand, were participating in rural banking only as aliens to this field since they were meant for meeting the financial requirements of trade and commerce. In view of the huge gap in rural credit from institutional sources and in a bid to meet the growing needs of financial assistance to modernise farming, the government adopted the multi-agency approach. This was intended to increase the farm productivity and thus raise the living standard of poor farmers. In July 1955, the Imperial Bank of India was taken over by the Goverment and renamed as State Bank of India with the objective of *extension of banking facilities on a large scale more particularly in the rural and semi urban aeas and for other diverse purposes.* This was an important milestone for rural banking in India. Other Commercial banks were also encouraged by the Government to provide more credit to agriculture, small scale industries and other hitherto neglected sectors of economy in the districts of Tamil Nadu[17].

The Government of India promulgated the Banking Companies Ordinance 1969 on 19 July 1969, in terms of which the Central Government acquired the undertakings of the 14 major banks which had deposits of not less than Rs.50 crores each on the last Friday of June 1969. They are :
1. The Central Bank of India Limited, 2. The Bank of India Limited, 3. The Punjab National Bank Limited, 4. The Bank of Baroda Limited, 5. The United Commercial Bank Limited, 6. Canara Bank Limited, 7. United Bank of India Limited, 8. Dena Bank Limited, 9. Syndicate Bank Limited, 10. The Union Bank of India Limited, 11. Alahabad Bank Limited, 12. The Indian Bank Limited, 13. The Bank of Maharastra Limited and 14. The Indian Overseas Bank Limited,

After nationalisation, it was made possible to pay special attention to the growth potential and developmental needs of local areas where the branches were situated, to take better care of the requirements of underdeveloped areas and backward sections of the population, to forge close relations with developmental and term financing institutions and to prevent use of credit for speculative and other unproductive purposes.

As a further step, Government wanted some more large banks to fall in live with the goal of achieving national objectives. Accordingly, six more banks nationalised in April 1980. These banks are: 1. The Andhra Bank, 2. The Corporation Bank, 3. The New Bank of India, 4. The Punjab and Sind Bank, 5. The Oriental Bank of Commerce, and 6. The Vijaya Bank.

Nationalisation gave an added impetus to banks' lending to priority sectors such as agriculture and small scale industries and there has been a greater involvement of banks in these and other socially desirable sectors.

There has been a sharp increase in credit to road transport operators and banks have stepped up their assistance to exports also. Needless to say that there has been a shift of the nationalised banks from the credit worthiness of the borrower to the credit worthiness of the project to be financed. This is evidenced by the larger amount spent by these banks to the other sectors like the retail trade, self employed persons and for the purpose of higher education. Thus, while the credit needs of organised sectors of industry and trade were met by the banks solely, the institutional credit facilities at reasonable rates of interest are extended to a large number of borrowers of small means also such as small farmers, small-scale manufacturers, retail traders, road and water transport operator, small business men, professionals, self employed persons, etc[18]. Thus, the commercial banks are helping the weaker sections of the society and in turn gearing up the economy towards socio-economic objectives.

Chit Funds

Another important land mark in the development of the financial institution is the organisation of Chit Funds in the Madras Presidency. The Chit Funds in this Presidency arose before communications were developed when the villages had to be largely self-supporting[19].

The term *'Chit'* in Tamil means a written piece of paper. The progenitor of Chit Funds in Tamilnadu is known as *Moyy Murai.* ;The term, *Moyy* means "call money pooled" and *Murai* means "custom." Under this system, a group of persons in a village or locality known to each other joined together to pool their resources to meet the need of an individual of the group. In later times, the term *Moyy* was replaced by the term Chit or Mai (Palm leaf) which was the notice or demand for payment of a member's contribution to the pool. Later, the names of the members of the group were written on chits or small pieces of paper or palm leaf rolled up and shuffled to pick out the person to whom the amount of fund was to be given. This was perhaps the origin of Chift fund. For a long time, women in villages developed the habit of saving a handful of rice or other grains for a rainy day which became very useful to face unexpected guests and unforseen expenditure. Generally speaking there were three kinds of Chits namely the Thattu chit, the Auction chit and the prize of the Lottery chit.

In the beginning, these Chit funds were confined to a small village or to a particular community in which people knew each other intimately. Under such restricted conditions, it worked successfully among persons of limited means. The circumstances that *hastened* the growth of the Chit funds were the lack of organised credit facilities to permit savings, deposits, the accommodation of small capital and the availability of loans on easy terms. The dominant feature of the transaction was that it enabled a large number to gradually save money and to receive their savings in a lumpsum. The

scheme in their case was an incentive to thrift. Also the Chits were designed to help the people in times of dire need and at emergency. The Chit funds no doubt showed a great deal of adaptability to the conditions that prevailed in the area in which they were operated.

The indebted landlord, the needy trader, the improvident weavers and other artisans, the hard working daily labourers and factory workers, the helpless vegetable vendors and similar classes derived benefit from the transactions[20].

Number of small private chit funds were in existence in Chengalpattu M.G.R. district at the beginning of this century. At present there are only two Chit funds functioning in the district, the amount invested by these Chit Companies is Rs.59,000/-.

Nidhis

Like Chit funds, *Nidhis* with enlarged functions were the thriving financial institutions in the Tamil Country since the middle of the nineteenth century. But, their vigorous activity began only from the second quarter of the present century. The Nidhis in the districts of Tiruchirappalli, Thanjavur, Chengalpattu and Coimbatore districts are counterparts of the Chit funds in the districts of Ramanathapuram, Madurai and Tirunelveli[21]. The essence of these nidhis is mutuality. The nidhi is a method of doing business. It is defined as a group of men united to help one another by common contribution of funds, which are to be lent out to the members only for their benefit. All profits derived from its operations are to return to the members. Each member enjoys the same rights and privileges as every other member in his transactions with the Nidhi. The need for the formation of these Institutions was perhaps due to exorbitant rates of interest charged by the money lenders. Infact the schemes of the Nidhis are welfare oriented and their functions and activities are more diverse than that of Chit funds. Nidhi present a peculiar feature and they exist almost in South India. They are also styled as Mutual benefit Societies, Permanent Fund etc[22]. The Nidhis are more systematised in their working and their affairs are given greater publicity than those of the Chit funds.[23] In fact, it is a special type of Indigenous banking Institution functioning efficiently in the Chengalpattu-MGR district as in other districts.

The main aims of the Nidhis are, to help the people to save money; to advance loans on real property, on jewels and on deposits; to undertake such other activities which will promote habits of thrift among the common people; to give donations or to finance for the activities connected with national, charitable, educational, religious and scientific purposes and to organise such institutions which will promote national, charitable, educational scientific and religious interests. The Nidhis are registered under the Indian Companies Act, 1913 and are brought under the Regulations of Banking Companies Act.

Development of Commercial Banks

As per 1991 census, the rural population of the Chengalpattu-MGR district is 25.65 lakhs. Out of which 12.98 lakhs are males and 12.67 lakhs are females indicating a strong rural orientation of the district economy. The literate and educated is 12.10 lakhs of rural and 14.37 lakhs of urban population[24].

Right from the beginning of 20th Century, the Nationalists were keen in developing native industries and financial institutions in India. In the Madras Presidency too, the Nationalists felt the importance of Swadeshi Institutions. In the field of banking also, the Swadeshi activists desired to start a banking institution free from all the influences of Imperialists. The collapse of *Abuthnot and Company,* Madras which was governed entirely by British financiers gave an impetus to the Swadeshi banking activity in Madras[25]. As a result, the Swadeshi activists decided to establish a native bank. An announcement to that effect appeared in The Hindu dated 6th November 1906. The announcement notified that a capital of Rs.50 lakhs would be raised by selling 10,000 shares of Rs.50/- each. The business of the bank would be confined to receiving deposits and lending against good personal or other sureties. The National Press welcomed the move and requested the public to invest their money in the Indian Bank. As a result of the persistent efforts of the Nationalists, the Indian Bank started functioning from 15th August 1907 under a Board of Directors. The establishment of the bank undoubtedly helped in turn, the spread of the Swadeshi movement in Madras.

Role of Indian Bank In the Past

The Indian Bank, right from its inception, had been actively carrying on its transactions, growing by leaps and bounds and helping the people to the extent possible. It had grown as one of the major banks in India with a remarkable capital so as to be scheduled as a Nationalised Bank in 1969.

Lead Bank Scheme

The Lead Bank Scheme which was introudced as a mere concept in 1969 to speed up branch expansion in rural areas is considered as a crucial element in the economic development of the country. With the various developmental activities being implemented in rural areas, the scheme has undergone a lot of changes and consistently produced good results. Particularly it worked very well for the development of weaker sections. The concept of the lead bank scheme arose out of the application of an intensive area approach to ensure the spread of banking facilities and regional development. The scheme was introduced by the Reserve Bank of India in December 1969 on the recommendations made by two study groups appointed by the Government of India, under the Chairmanship of Dr.Gadgil and Professor F.K.P. Nariman. These study groups recommended that banks could be given specific responsibilities for the development of banking in

various districts in the country so that these banks could survey the banking potential, establish branches and work systematically to fill the credit gaps in the rural areas. The number of districts allotted to an individual bank was decided on the basis of its size and resources.

Objectives

The main objectives of the lead bank scheme are to develop banking facilities particularly in rural and backward areas; to improve bank's advances in the rural areas especially to priority sectors and weaker sections; to bring about greater understanding and co-operation between banks and government departments or agencies in implementing various programmes and schemes; to assess the major constraints impending the development of the district's economy and to induce the appropriate agencies to take remedical measures. In fact, Lead Bank Scheme aims at joint financing of rural development through co-ordinated efforts in a planned and systematic manner and also helps in raising the standard of living of the people who live below the poverty line.

Indian Bank is the lead bank for Chengalpattu-MGR district. According to the Survey Report of the Indian Bank of 1970, there were eight nationalised banks operating in the district and they had built up a network of 64 branches. These banks have gradually spread their area of operation to quite a large number of villages within the district. As on 1990-91, commercial banks are operating in the district with a network of 254 branches, Even then, the money lenders are still lending to the farmers in the villages at exorbitant rates of interest. The survey of the district conducted under the Lead bank scheme reveals the existences of numerous sources devoid of banking services, despite the existence of banking potential at these centres. After screening the agricultural activities, crop pattern, trading operations, composition of the working salaried section of the residents of such villages etc., the survey undertaken in 1970 reported that there were 24 centres without banking facilities. It was stressed that branches of banks could be immediately established in these centres. The names of those centres were Guduvancheri, Kelambakkam, Ponvilainthakalathur, Singaperumalkoil, Thirupporur, Neyadavakkam, Parunthur, Perunagar, Selavakkam, Karuguzhi, Padalam, Ennore, Minjur, Porur, Pattabhiram, Sunguvarchatram, Thinnanoor, Amayarkuppam, Thiruvalangadu, Kadambattur, Kannigaper, Perumbakkam,; Periapalayam and Valliyur. In all these centres branches of nationalised banks have since been opened[26].

Achievement

At the end of 1968, there were 46 bank offices with Rs.5.91 crores of deposits and Rs.3.51 crores of advances in Chengalpattu MGR district. After nationalisation, the banking system has been changed from selective banking to mass banking. At the time of nationalisation of banks in 1969, there were

only 55 branches of Commercial banks in Chengalpattu district. A branch of a bank served the population of 50,180 as against all India average of 37,000. The net work of 254 branches has now brought down the per-branch-average to 14,220.

At the end of December 1983, the total number of Commercial Bank branches in the district were 199, with total deposits of Rs.175.58 crores and advances of Rs.150.77 crores. Priority sector advances were of Rs.99.90 crores covering 184537 borrowers. At the end of December 1984, the bank branches were 208 and the deposits and advances stood at Rs.283.72 crores and Rs.193.37 crores respectively. Priority sector advances during this period were 126.48 crores covering 207434 borrowers. At the end of December 1985, there were 218 branches. The total deposits and advances of the district stood at Rs.236.57 crores and Rs.226.28 crores respectively. Advances to priority sector during 1985 were 136.63 crores covering 231901 borrowers.

At the end of December 1986, there was only one addition to the total number of bank branches taking the total to 219. There was a steady increase in the deposits and advances during the period. The deposits and advances were Rs.299.81 crores and Rs.283.42 crores. Steady growth is witnessed in priority sector advances also. The total of the priority sector advances was Rs.173.94 crores, covering 2,63,176 borrowers. At the end of 1987 there were 220 bank branches and the total deposits were Rs.319.97 crores and advanes were Rs.331.44 crores. The advances in the priority sector stood as Rs.189.48 crores covering 2,76,374 borrowers. Similarly, during 1988 the bank branches were 245 and the total deposits amounted to Rs.417.40 crores and total advances were Rs.402.11 crores. In the priority sector the advances amounted to Rs.241.15 crores covering 3,00,709 borrowers. The growth of banking was steady and in 1989 the number of branches was 254. The deposits were Rs.434.42 crores and the advances were 441.06 crores at the end of March 1987. In this year, the advances for the priority sector were Rs.271.55 crores and the total number of borrowers were 3,28,858.

The credit deposit ratio and ratio of priority sector advances to total advances during the years 1984 to 1986 are tabulated here under:

Year	*Percentage of credit Deposit Ratio*	*Percentage of Priority Sector advances to total advances*
1.	*2.*	*3.*
1984	94.92	65.40
1985	95.65	60.38
1986	96.76	63.73

The performance of banks in implementing Annual Action Plans from 1984 to 1986 March is given in *Appendix-2.*

By the end of March 1990, 254 branches of the Commercial banks, 26 branches of Co-operative banks and 15 branches of State Land Development banks were functioning in the district. Out of 254 branches of the Commercial banks, 140 were classified as rural, 70 as semi-urban and 44 as urban branches. Total deposits of the Commercial banks amounted to Rs.516.41 crores at the end of March 1990 registereing an increase of 81.99 crores or 15.87 per cent over the deposits of Rs.434.42 crores at the end of March 1989. Total credit aggregated to Rs.506.49 crores at the end of March 1990 compared to 441.06 crores at the end of March 1989 showing an increase of Rs.65.43 crores or 14.33 per cent. Consequently the Credit Deposit ration was 98.08 per cent at the end of March 1990.

Aggregate Credit to priority sector was Rs.296.61 crores at the end of March 1990, covering 3.38 lakhs beneficiaries. The percentage of piorty sector credit to total advances works out to 58.58 per cent at the end of March 1990 as against the stipulated level of 40 per cent. The outstanding level of credit under Differential Rate of Interest at the end of March 1990, amounted to Rs.6.47 crores or 1.47 per cent of the total outstanding credit at the end of March 1989 against the desired level of one per cent. Out of the total credit of Rs.506.49 crores, direct lending to agriculture aggregated to Rs.134.01 crores or 26.45 as against the norm of 18 per cent at the end of March 1990.

Break up for the branches of nationalised and other local banks at the end of March 1991, is given below:

1.	Indian bank	80
2.	Indian Overseas bank	37
3.	State Bank of India	36
4.	Canara Bank	25
5.	Central Bank of India	13
6.	State Bank of Mysore	1
7.	Andhra Bank	1
8.	Bank of Baroda	6
9.	Bank of India	7
10.	Dena Bank	2
11.	Punjab National Bank	1
12.	Syndicate Bank	5
13.	United Commercial Bank	6
14.	United Bank of India	5

15.	Vijaya Bank	1
16.	Bank of Madura	5
17.	Nedungadi bank	2
18.	South Indian Bank	9
19.	Karur Vysya Bank	6
20.	Lakshmi Vilas Bank	1
21.	Vysya bank	2
22.	City Mercantile Bank	2
	Tamil Nad Mercantile Bank	1
	Total	254

In the year 1991, the total deposits and advances of these banks are Rs.611.88 crores and Rs.583.33 crores respectively. The credit deposit ratio is 95.33. The amount spent for agriculture is Rs.158.63 crores and the amount spent for weaker section is Rs.130.51 crores.

Blockwise details of commercial banks and branches operating in this district are given in *Appendix - 3.* Number of branches of each bank, and their advances and deposits are tabled in *Appendix - 4.* Statistical data on the operation of Commercial Banks and their performance from 1980 to 1990 are shown in *Appendix - 5.*

Role of the Banks on Development Programmes

Self employment programme for educated unemployed youth urban poor form part of the scheme envisaged in the development programmes. This scheme was introduced in the year 1983, and the district target was 2500 units. In all, 1567 applicants received loans, as against 2030 applicants who were sanctioned loans. For the year 1984-85, a target of 3250 units was set, whereas loans were offered to 2445 applicatns to the tune of Rs.4.97 crores. For the year 1985-86, the district target was 2100 units and disbursement was made in 1068 cases to the extent of Rs.1.87 crores. The disbursement of loans continued year after years. For the year 1987-88, the district target was set at 2100 units and as on 15 December 1987 sanction was accorded in 2141 cases and disbursement made in 1244 cases amounting to Rs.2.33 crores for the implementation of self-employment for educated unemployed youth. For the year 1987-88, the target for the district was set at 1050 units. As on 15 December 1987, 298 applications had been sanctioned and disbursement was made in 191 cases amounting to Rs.38.90 lakhs for the self employment programme for urban poor. The target could not be acheived due to the applicant's inability to secure suitable place of business to fulfil the terms and conditions of banks; and delay in power supply and clearance from government departments and local bodies.

Under Integrated Rural Development Programme in the year 1985-86, financial assistance to the tune of Rs.2.70 crores was extended covering 10,798 beneficiaries. During 1986-87, 20,168 beneficiaries were assisted financially which amounted to Rs.7.8 crores. During 1987-88, it was planned to cover 4956 new beneficiaries for the first dose of assistance and 15828 beneficiaries for the second dose of assistance with a credit outlay of Rs.7.9 crores. Number of SC/ST beneficiaries were estimated as 9865 during 1987-88 and women beneficiaries as 6338. Under Self Employment Programme for urban poor, 3228 beneficiaries were covered during 1987-88[27].

Bankable schemes are estimated at block level, taking block as a unit for development. In estimation of credit demand for bankable schemes and their physical members, while preparing the District Credit Plan, the infrastructure available at each block in terms of power supply, cropping patterns,ground water potential, roads etc. and action plan of government departments, at block level (such as department of Industries, Dairy, Animal Husbandry, Agriculture) are worked out. Interest is also evinced to assist weaker sections of the society, small and marginal farmers and landless agricultural labourers.

Poverty alleviation programmes such as Integrated Rural Development Programme, Self Employment Programme for Urban Poor and Massive agricultural programmes are percolated to the block level as per the plans of the departments concerned. The available funds are demarked for each sector, namely Agriculture, Industry and Services taking into account the performance of banks in these sectors in the preceding three years and the credit demand estimated for each block.

TAHDCO SCHEME:- The Scheme formulated under TAHDCO are mainly for the development of SC/ST. Under this programme, Loans to SC/ST beneficiaries are disbursed under schemes like Dairy, Fisheries, Individual Enterepreneures Scheme, Self Employment, Agriculture etc.

Crop loans

Another important function of the banking institution is the disbursment of crop loans, meant for purchase of seeds, fertilizers and for meeting labour costs. The credit demand for crop loan is normally worked out as 60 per cent demand of the estimated area shown under crops.

Another important feature in this direction is "Special Food Grains Production Programme" which has been launched since Khariff season 1988. This was continued for the year 1990-91 to increase the production of food grains. Chengalpattu-MGR district is one of the districts identified in Tamil Nadu for increasing the production of rice.

With good rainfall in the district, the commercial banks were given a slightly increased target of Rs.17.60 crores for the year 1990-91 as against the target of Rs.17.50 crores in the previous year under Short Term Loans

and Rs.3.36 crores under long term loans. The achievement of the Commercial banks in the district upto 31 March 1991 was Rs.17.66 crores under Short Term Loans and Rs.3.39 crores under long Term Loans[28].

Sugarcane is also an important crop cultivated in the district, with two Co-operative Sugar Mills situated in Padalam and Tiruvalangadu. The total area under sugarcane cultivation is around 8,000 hectare. The credit for sugarcane is mainly met by Co-operative banks in the district though Commercial banks are eagerly willing to lend for the crop.

As envisaged in the New 20 Point Programme, with a view to increase the Oil Seeds production in the district, the Directorate of Oil Seeds, Madras planned to cover 1.07 lakh hectares of land for the production of oil seeds in the district in the year 1990-91 of which one lakh hectares was set apart for the production of groundnut and 0.07 lakh hectares for the production of gingelly with a credit support of Rs.465.12 lakhs. However, based on potentialities and ressources available the banks in the district have formulated a Credit plan of Rs.1040.99 lakhs for a coverage of 25,845 acres for the year 1991-92[29].

Minor Irrigation

Credit demand for minor irrigation schemes is normally estimated taking into consideration the availability of ground water potential, scope for energisation of pumpsets, new wells, and satisfying distance criteria and also the government programmes under Massive Agricultural Programme. A modest attempt has been made to finance the Drip and Sprinkler irrigation in the district. These schemes are expected to lead to efficient water management in the district.

Equipment Loans

In view of the multiple cropping pattern followed by agriculturists, agricultural activity has become intensive and there is therefore an absolute need to mechanise agricultural operations. There are about 2785 tractors and 1592 power tillers owned by the agriculturists apart from those available with Government units in the district. Taking into account the land holding pattern and the ability of the agriculturists to absorb farm mechanisation in terms of their resources and repayment capacity of loans, credit facilities are extended by the banks to agriculturists for the purchase of tractors, power tillers, oil engine, electric motors, submersible pumps, power sprayers, tyre carts, country carts and others.

Land Developments

This programme includes land smothening to improve institutional moisture conservation, contour key line interruption, bunds construction, deep furrow formation across the slopes and putting up of simple corrosion control live structures, depending upon the actual requirements at fields belonging

to small and marginal farmers. The scope for land development is estimated during the indepth studies conducted by the banks at block level. Handloom and Plantation is also encouraged by banks. Around 10,000 hectares of land is already raised for development of mangoes, casuarina and other fruits, vegetables and flowers.

Activities allied to Agriculture

The district is predominantly agrarian and hence agriculture is supplemented by allied activities such as dairying, sheep and poultry farming, fishery and sericulture etc. The details of land holdings of the agriculturists and the allied activites necessary to give them supplementary income are ascertained during the indepth studies by the lead bank. Credit outlay is determined in regard to all activities allied to agriculture in terms of units, under each activity. Care is taken while determining number of units, to include all government sponsored programmes. Milk collection centres and routes at each block level, grazing pastures available and availability of quality animals and availability of veterinary services are taken into account, while fixing the number of units under each allied activity. Financial assistance is extended by the bank accordingly.

Small Scale Industries

The district is having ample potential for setting up of small scale industrial units under tertiary sector and units under self employment for educated unemployed youth. All of them are given financial assistance by the banks, with reference to their needs. For more details on 'Small Scale Industries', please *see* chapter on INDUSTRIES

Further credit is also estimated to cottage and village industries such as handlooms, mat weaving, stone carving, basket, bleaching and dyeing, toy making, embroidery and accessaries parts for automobiles.

Services

Under this sector, people engaged in transport, retail trade and business and those engaged in self employment, *viz.*, tailors, launderers, hair dressers, etc., are taken into account while reckoning the number of units at block level, depending upon the existing potential and scope for development. Financial assistance is available to them in all banks to develope their carrier in their respective profession.

Co-operative Movement

The Co-operative movement which is permanently and widely successful must be a spontaneous growth, having its roots in the mind of our rural population[30]. Agriculture is an industry which is subjected to peculiar fluctuation and peculiar channels. It is an industry in which, in the normal course of affairs, the ordinary cultivator would be driven for one cause or another to borrow capital in abnormal years and he is forced to go to private

money lenders who would only help him at exorbitant rates of interest. The cultivator does not prefer to go to a jointstock bank, since the joint stock banking system had never succeeded in adapting itself to the requirement of this particular class of community. It is here that the co-operative movement steps in to safeguard the interest of the people.

The origin of Co-operation is perhaps as old as Civilisation itself. As a movement however it is about two centuries old. As early as 1892, the then Madras Government deputed a senior civil servant Sir Frederick Nichalson to Germany to study the working of village banks. The civil servant submitted his views on adopting this method in India, The result was the emergence of Co-operative Societies Act of 1904, modelled largely on English Friendly Societies Act. It was passed for the establishment of credit societies both in rural and urban areas for providing cheap credit facilities to poor and needy living in the same area[31].

The Act passed in 1912, provided for the establishment of societies for the purposes other than credit. 'Co-operation' having become a state subject in the year 1919, was introduced in 1932 and 1934[32]. The 1934 Act was repeated by the Co-operative societies Act 1983, in which a separate chapter on Land Development Banks was introduced.

All the sectors *viz.,* agriculture, dairy development, fisheries, animal husbandry and industries have been given entry to Co-operative movement, since it serves the public with a network of consumer stores. Housing co-operative societies play a vital role in providing basic amenities to the people.

Primary agricultural credit societies look after short term and medium term credit needs of the agriculturists, while their long term credit needs are met by the primary Land Development Banks. The role of the Co-operatives in holding the price line and distribution of essential commodities to the public is quite significant. Short and medium term loans to the people in the Urban areas are issued by the Urban Co-operative banks for starting small scale industries, trade and commerce, pursue education and for payment of prior debts[33].

The First Co-operators' District Conference in Chengalpattu

It might have been once thought that the task of popularising the movement among the village peasantry would, for obvious reasons, be infested with difficulties of a special character. But it has since been proved that even the village folk, if properly approached and taught, would eagerly adopt every movement calculated to do them good. The Chengalpattu MGR District is perhaps one of the few districts in the State where the development of Co-operative credit is a matter of necessity and is by no means an indifferent cure for some of the surest needs of its inhabitants. But it took much time for the Co-operative movement to gain momentum in the district.

It was only Thiru.Adinarayanaiah, a retired Deputy Commissioner of Revenue Settlement Department belonging to Tirur Village of Chengalpattu district who convinced the feasibility of the scheme of village bank. His proposal was to start a first rural bank in this place, Tirur[34]. Sir P.Rajagopalachariar was appointed by the Government of Madras as the first Registrar of Co-operative Societies. It was he, who registered the above first Co-operative Society in the year 1904 at Tirur. Tirur village is located in Tiruvallur Taluk and the first Co-operative Society was started on 30 August 1904 and the first President of the Society was Rao Bhadur Adinarayanaiah and the Secretary was Thiru.Velayuthampillai. The area of operation of the Society comprised twelve villages adjoining Tirur. When the Society was established in the year 1904, it had 214 members, a deposit of Rs.410/- collected from those members, a loan outstanding of Rs.499/- and a first year profit of Rs.542

Loans were issued to the members for the purpose of purchasing cows, to redeem old dues and to pay land taxes[35]. In the year 1920-21, the society obtained loan for Rs.500 from the Central Co-operative Bank and it constructed a godown at the cost of Rs.4,000 in the year 1922.

In Kilacheri Village of Chengalpattu District another Co-operative Society was registered on 4 September 1904 and it started functioning from 7 September 1904. Thiru. Aruliyya Naidu was the first president of the society and the working capital of the society was Rs.5,000. The maximum limit of the loan was Rs.250. From the year 1971, the society was functioning from its own building. A conference of cooperators was held on 21 February 1909 at the spacious hall of Pachaiyappa's High School, Kancheepuram and Rao Bahadur M.Adinarayana Iyah was the president of this conference. It was attended by numerous persons and papers were presented by R.Ramachandra Rao, T.S.Subrahmanya Aiyar, T.K.Hanumanta Rao, C.Aruliah Nayudu, Swami Govinda Nayudu and Venkatanantha Aiyangar of Uttaramerur and many others to highlight the Co-operative programmes. The only formal resolution adopted in the conference was to make an appeal to Government to withdraw the prohibition against the Government servants depositing in Co-operative Credit Societies. It is noteworthy that the entire proceedings were conducted in Tamil and that the delegates paid rapt attention[36]. On 1st December 1909, there were three Central Banks, one each at Madras, Salem and Tiruchirapalli. All these banks were on the basis of limited liability. There were two Urban Banks in Chengalpattu M.G.R. District, one on limited liability and another on unlimited liability. The district was then served with 56 rural banks, 3 on limited liability and 53 on unlimited liability.

Thus the district had large number of Co-operative Credit Societies and banks. So, with the spread of such a net work of societies, the establishment of an Association called the Co-operators' Society for the

express purpose of further developing the movement and for safeguarding the interests of credit societies was a necessary step towards the ultimate consummation of the avowed object underlying the beneficient measure of the Government[37].

The Big Kancheepuram Co-operative Town Bank limited, Kancheepuram

The Big Kancheepuram Co-operative Town Bank Limited is the first Town Co-operative bank started in India. This is a unique credit of this district. As soon as the Co-operative Credit Societies Act (Act X of 1904) was passed, the then Madras Government appointed Shri.P.Rajagopalachari as the first Registrar to organise the Co-operative movement. He was "shrewd enough to perceive that there were sufficient co-operators available at Kancheepuram to work on Urban Bank and chose the beautiful historical town of temples for starting the first Urban Bank. At an informal conference of the leading citizens of Kancheepuram convened by the Registrar at the "Kancheepuram Reading Room and Tennis club", a unanimous resolution was passed under the Presidentship of Rao Sahib N.Venkatapathi Naidu, retired tahsildar and Municipal Chairman, establishing an Urban Bank.Thus, the first Urban Bank came into being. It was registered as a Co-operative Society with limited liability on 8 October 1904 and it began to function on 15 October 1904. The Registrar thought "that the success of the Urban movement depended on the successful working of this bank." So, he evinced a keen interest, even in its day to day affairs.

The main objects of the bank are to borrow funds from members and others to be utilised for loans to members for useful purposes; to issue loans to small scale industries and small industrialists to collect bills issued, accepted and endorsed by constituents of the Bank who have deposits accounts with the Bank and discount cheques of members approved by the board under byelaw: to do such kind of banking business as would be conducive to the healthy growth of Co-operative movement; to open one or more branches for the benefit of the members; and to encourage generally thrift, selfhelp and Co-operation among the members.

Main Activities of the Bank

In the year 1904, there were no financing banks and the sources of the bank consisted of capital invested and deposits mobilised from members. Only after two years deposits from non-members were accepted. The bank gradually introduced various kinds of deposits schemes to suit all types of customers. The deposits introduced by the Bank and the rate of interest paid by the bank for such deposits are listed below:

		Rate of interest	
(a)	Fixed deposit	13.5	per cent
(b)	Cash Certificate (Compound interest)	13.5	per cent
(c)	Recurring deposit	13.5	per cent
(d)	A.Balakrishna Mudaliar Memorial cash deposit	13.5	per cent
(e)	Valarpirai deposit	13.5	per cent
(f)	Hundi deposit	10.0	per cent
(g)	Daily deposit (one year)	6.0	per cent
(h)	Savings deposit	7.0	per cent
(i)	Current deposit	0.5	per cent

In deposits, the bank is now in a commanding position among the investing public of the area. Various kinds of loans are issued to the members, while jewel loans are issued to the villagers.

At present, the maximum borrowing power of member is fixed as Rs.60,000/- for various purposes as follows:

On the security of immovable property	-	Rs. 1,00,000
On the Pledge of jewels	-	Rs. 25,000
Consumer loan	-	Rs. 5,000
For small business (surety basis)	-	Rs. 5,000
Daily Collection loan (Thandal) (surety basis)	-	Rs. 3,000
For salary earners-pay recovery (surety basis)	-	Rs. 3,000

The present loan limit is Rs. 3,00,000/- for the purpose of small scale industries and also for buying vehicle. This institution is doing all banking business like any other commercial banks. It has opened branches in the following places and the volume of business is given against each:

Name of branch	Year of establishment	Volume of business as on 30 June 90 (Rs. in lakhs) Deposits	Loans
1. Pillaiyarpalayam	19.6.75	159-95	144-.05
2. Gangaikondan Mandapam	19.6.75	260-12	211-13
3. Gandhi Road	5.9.79	259-54	190-72

Schemes implemented for the welfare of weaker sections

As per the instructions of the Reserve Bank of India, the Bank is lending for priority sector. It also lends to weaker sections of the society and physically handicapped at a different rate of interest *i.e.*, four per cent p.a., subject to a maximum of Rs.7,000/- repayable in 60 months. The bank also advances loans to small scale industrialists, traders, professionals, transport operators and the like. The total loans lent for priority section exceed 75 per cent of total loans issued. It is higher than the Reserve Bank of India's target of 60 per cent.

The details of Advances to these Type Of Loan upto 31 March 1992

Sl no.	*Kind of loan*	*No.of accounts*	*Loan amount advanced*	*Balance amount as on 31 March 92*
			(Rs in lakhs)	
1.	Cottage and small scale industries loans.	24092	1068.28	184.37
2.	Small business	28656	1243.29	218.10
3.	Retail traders	21802	866.75	119.74
4.	Professional and self employed persons	933	51.28	11.16
5.	Transport operators	86	7.85	0.50
6.	Housing loan	23678	790.46	4.77
7.	Consumption loan	7336	44.58	0.58
8.	Allied to agriculture	31032	1027.12	295.33
	Total ..	137615	5099.61	834.55

The elected Board of Directors had been dissolved on 29 July 1991 by the Government of Tamil Nadu since then the Bank is managed by the Special Officer/Deputy Registrar.

Safe Deposit Locker facility is offered to its members. This facility was first started in this Bank alone in the whole of Tamil Nadu. In recognition of its rapid growth, the Bank has been awarded a shield by the Tamil Nadu Co-operative Union as the best working Urban Bank in the years 1979-80 and 1984-85. The total working capital of the bank exceeds Rs.15.00 crores. This Bank is second leading bank in the State. This is the only Bank which has given loan amount of Rs.8.94 crores and deposit collection Rs.13.26 crores during the period 1 July 1991 to 31 March 1992 in the district. This is the biggest Urban Co-operative Bank in the district having the largest deposits and having issued loans to priority sectors to the maximum extent possible.

It is noteworthy that its total deposits now exceed Rs.14 crores and total advances exceed Rs.10.48 crores. In addition, "Teller System" has been introduced in this bank.

The Bank has completed 88 years of service as a financial intermediary. It has mobilised the small savings of the poor and middle class families and has helped thousands of weavers, small traders, artisans, small farmers and others to meet their credit for better living and for better production. The progress of this Bank in various spheres is given in *Appendix - 6.* There are three branches for the bank in Kancheepuram town itself to offer better services to its members and general public[38].

Kancheepuram Co-operative Urban Bank

There is another financial institution in Kancheepuram involving in notable economic activity and doing good service to the needy people. Efforts were afoot and as per the instructions of the Registrar of Co-operative Societies in the year 1909, the starting of this institution was proposed. Accordingly, the Little Kancheepuram Co-operative Urban Bank was started in the year 1910 to facilitate more services to the people of little Kancheepuram. This Bank was registered on 25 August 1910.

Other Co-operative Urban Banks

Similarly, the Chengalpattu Co-operative Urban Bank was registered on 6 May 1910 and it started functioning on 26 June 1910. The other Co-operative Urban Banks in the district are Maduranthakam Co-operative Urban Bank, Tambaram Co-operative Urban Bank, and the Thiruvallore Co-operative Urban Bank. Thus, there are six Co-operative Urban Banks in the district. Detail of membership, share capital, deposits received, loans advanced etc., in regard to those banks are tabled here under:

1.	Number of the Co-operative Urban Bank	6
2.	Membership	11,0911
3.	Paid up share capital	Rs. 59.52 lakhs
4.	Deposits	Rs. 208.73 do
5.	Borrowings	Rs. 12.72 do
6.	Working Capital	Rs.1357.81 do
7.	Loans issued	Rs. 348.08 do
8.	Overdues	Rs. 198.79 do

The first ten Co-operative Societies registered in the Chengalpattu-MGR District are as follows: 1. Thiruvarur Co-operative Society. 2. Uthiramerur Co-operative Supervisory Union. 3. Kilacheri Co-operative Society. 4. Big Kancheepuram Co-operative Urban Bank. 5. Agaram Co-operative Irrigation Society. 6. Kilacheri Village Co-operative Milk Society. 7. Poonamallee women Co-operative Stores. 8. Chengalpattu District Co-operative Union.

9. Madurantagam Taluk Co-operative Union and 10. Kancheepuram Kamatchiamman Silk Weavers Co-operative Society[39].

Kancheepuram Central Co-operative Bank

The Kancheepuram Central Co-operative Bank was registered in the year 1914 and it started functioning on May 23, 1915. Two hundred and forty six members were enrolled in the year 1915-16, when its deposit was Rs.0.32 lakh and the loan outstanding was Rs.2.23 lakh. The first branch of this bank was started on 9 November 1962 at Thiruvallore. Now, there are 26 branches of the bank, functioning in various parts of the district[40].

Membership and Share capital

Seven hundred and thirty two Co-operative Societies including government, are members of the bank with a total paid up share capital of Rs.458.89 lakhs. This includes a sum of Rs.100.00 lakhs contributed by the State Government under State participation scheme[41]. The bank is administered by a Special Officer in the Cadre of Joint Registrar of Co-operative Societies at present.

Borrowing

The borrowing of the bank against limits sanctioned by NABARD and Tamil Nadu State Co-operative bank are furnished below:

		Limit Sanctioned	(Rs. in lakhs) *Borrowing as on 31 March 1992*
1.	Agricultural Finance S.T (NABARD)(TNSCB)	1285.00	11638.05
2.	M.T(Automatic and Schematic Refinance)	—	100.40
3.	Jewel loan	300.00	300.00
4.	Weavers finance	1830.00	1407.33
5.	Nonfarm Sector	—	75.11

The bank gives full coverage to agricultural and handloom sectors. It also provides credit to Nonfarm sector. Jewel loans have been issued through its 26 branches to an extent of Rs.292.01 lakhs. The number of beneficiaries is 4522. In addition, 196 Primary agricultural Co-operative banks in the district have also issued jewel loans to an extent of Rs.1280.29 lakh, to 27475 beneficiaries for their own deposits and financial accommodation provided by the bank[42].

A notable credit to this bank is that the Government have selected this bank as the best Central Co-operative Bank during the year 1989 and awarded a shield also. The Bank was also placed in 'A' class during 1991-92

according to the working capital requirement, in addition to the 'A' Audit classification.

Bank's role in Agricultural Sector

The total number of Primary Agricultural Co-operative Banks in the district is 316. These primary Agricultural Co-operative Banks are meeting the credit needs of the Agriculturists in the district by way of disbursing short term agricultural loans. These loans are disbursed in cash and kind. Besides, these primary Agricultural Co-operative Banks are also issuing loans for the purchase of milch cattle, sheep, and tyre cart, bullock cart and work bullocks etc.

The Primary Agricultural Co-operative Banks also undertake the distribution of essential commodities through their village shops at various centres. The Banks also provide financial accommodation to sugarcane growers through two Co-operative Sugar Mills situated at Padalam in Madurantakam Taluk and Thiruvalangadu at Tiruttani Taluk who are members of the Sugar Mills.

Bank's role in Non-Agricultural Sector

The Bank's functions reach other spheres also in this district, 24 Silk Weavers Societies and 148 Cotton Weavers Societies are functioning. These societies are financed by Kancheepuram Central Co-operative Bank. They produce the famous Kancheepuram silk sarees and sell the goods through their retail shops at Kancheepuram and their various branches functioning in major cities in Tamilnadu, Andhra and Karnataka States. Besides, the Cotton Handloom Weavers Societies are producing Janatha varieties of handloom sarees, dhoties and also handloom lungies and selling the products through retail outlets and Tamilnadu Handloom Co-operative societies at Madras.

For the purpose of issuing Jari Kora etc., to Silk Societies, Tamil nadu Co-operative Marketing Silk Federation is functioing in the district. For the issue of yarn to co-operative handloom societies, one Co-operative Spinning Mills *viz.,* Sri Kancheepuram Kamatchiamman Co-operative Spinning Mills is functioning in the district. Tamil nadu Handloom Co-operative project which also functions in this district has many branches at various centres in the district. These institutions are financed by this Bank. Details of loans issued by the bank from 1976-77 to 1989-90 are given in the *Appendix-7.*

The Kancheepuram Central Co-operative Bank is having its branches at the following places. The date of establishment of the branches and the deposits with each branch are given here :

S.no.	Name of the branch	Date of Establish-ment	Deposits (Rs in lakhs)
(1)	(2)	(3)	(4)
1.	Tiruvallur	9.11.62	195.75
2.	Tiruttani	6.11.64	176.74
3.	Chengalpattu	13.11.64	284.84
4.	Padalam	29.08.66	95.32
5.	Maduranthagam	18.11.67	127.96
6.	Ponneri	30.10.68	72.81
7.	Uthukkottai	31.03.69	35.39
8.	Pallipet	02.05.69	50.25
9.	Tambaram	14.05.70	209.90
10.	Acharapakkam	09.10.70	57.58
11.	Uthiramerur	15.03.71	145.56
12.	Thirupporur	19.03.71	180.48
13.	Minjur	20.03.71	78.95
14.	Poonamallee	11.01.71	90.14
15.	Adambakkam	14.02.72	46.79
16.	Avadi	20.03.72	120.68
17.	Gandhi Road	21.11.82	529.57
18.	Gummidipoondi	19.2.1973	50.72
19.	Kodambathur	14.3.1974	63.41
20.	Kunrathur	07.1.1972	50.46
21.	Red Hills	25.9.1971	73.47
22.	Sriperumbudur	07.3.1974	99.04
23.	Thirukkalikundram	13.2.1974	106.75
24.	Thiruvalangadu	30.5.1985	49.55
25.	Thiruvothiyur	12.6.1972	95.11
26.	Walajabad	31.1.1974	291.47
27.	Head Office	30.5.1915	2149.14
			5528.39

Marketing and Co-operative Wholesale Stores

There are three Marketing Societies at Madurantakam, Tiruttani, and Sriperumbudur. Distribution of essential commodities to village shops in the area of operation of these Marketing Societies are undertaken by them. The Chengalpattu District Co-operative wholesale stores is attending to the distribution of essential commodities for the entire district and also to the belt area of Madras city.

Employees' Co-operative Societies

In this district, 118 Employees Co-operative Societies are functioning and they are getting medium term loan from Kancheepuram Central Co-operative Bank.

District Co-operative Union

Another important Co-operative institution is the Distsrict Co-operative Union at Kancheepuram. This Union attends to the co-operative needs and development programmes, by convening seminars and educational training programmes in the district.

Co-operative Training Institute

There is one Co-operative Training Institute at Kancheepuram which was started on 26 June 1959. This institute is conducting Diploma course in Co-operation. Training is given to the students every year and it has eight teaching staff. It also awards certificates to the students who come out successfully after the training programme. In the year 1992-93 this institute is imparting training to 400 students. This institution is also conducting short term courses and co-operative training courses through correspondence to the untrained employees employed in various co-operative institutions.

Land Development Bank

There are 15 Primary Land Development Banks functioning at various centres and they meet the credit needs of the long term finance of the agriculturists. This is really a boon to all agriculturists of this district, as they are very much benefited by the schemes of this bank.

Urban Co-operative Banks

There are six Urban Co-operative Banks functioning in the district, one each at Tiruvallur, Madurantakam, Chengalpattu, and Tambaram and two branches at Kancheepuram. These Banks accept deposits from the public and issue loans to the Small Scale Industries, offering Jewel loans and also loans for housing purposes.

Co-operative Agricultural Banks

Another important development in the co-operative sphere is the Co-operative Agricultural Bank. The first Co-operative Agricultural Bank in the

district was started in Uthiramerur on 22 November 1906 with 228 members and a meagre share capital of Rs. 285. The first president was Thiru. V.Venkatakrishna Iyer,[43] At present, there are 30 Agricultural Banks situated at Damal, Walajabad, Perunagar, Uthiramerur, Sunguvarchatram, Echoor, Maduramangalam, Mathur, Pichivakkam, Sriperumbudur, Poonamallee, Thirunindravoor, Madambakkam, Thirumudivakkam, Padappai, Singaperumalkoil, Thirukkalukundram, Bukkadurai, Meyyar, Cheyyur, Arani, Minjur, Pakkam, Vishnuvakkam, Kadambathur, Kilacheri, Perambakkam, Pannoor, Vengal and Poonimangadu. These banks serve 33 villages and 8.01 lakhs of people are benefited by these barks. The banks are having 58,584 membership on their list. Their individual paid up share capital is Rs.3932 lakhs while Government paidup share capital is Rs.10.11 lakhs. Their reserve fund is Rs.7.47 lakhs and the amount of loans advanced by them is Rs.314.06 lakhs. Food grains worth Rs.3.49 lakhs and other consumer items worth Rs.32.66 lakhs have been sold by them, so far.

Agricultural Co-operative Credit Societies

The Agricultural Co-operative Credit Societies are named as Primary Co-operative Banks from 1987. There are 337 societies functioning in the district covering 2328 villages. Individual paid up share capital of these societies is Rs.204.43 lakhs, while Government share capital is Rs.68.05 lakhs.

Chengalpattu Co-operative Urban Bank Limited, Chengalpattu

This bank was registered in 6 May 1910 and it started functioning from 25 June 1910 onwards. It covers the entire Chengalpattu Municipality, Hanumantha Putheri and Pallipakkam villages. The main objectives of the bank are (a) getting deposits from the members as well as non-members and distributing the same as loans for productive purposes among its members: (b) collecting Hundis among the members and customers and issuing cheques and demand drafts to the members and customers: and (c) encouraging self-sufficiency, thrift and co-operative spirit, among its members.

The bank is having 'A' class and 'B' class members and in the case of 'A' category, each share value is Rs.10/- while for 'B' category, its value is Rs.5/- On 30 June 1991, this bank was in possession of Rs.9.27 lakhs as share capital. This includes the share capital of Rs.7.27 lakhs from 6369 `A' class members, Rs.1.95 lakhs from 22216 'B' class members and also a sum of 0.05 lakhs, being the Government share.

The bank receives fixed deposits, recurring deposits, savings deposits and current deposits. In the case of fixed deposits, the rate of interest is 13.5 per cent and for savings deposits it is 7 per cent and for recurring deposits it is from 13.5 per cent.

On 31 March 1992 the bank was having Rs.146.59 lakhs as fixed deposits, Rs.6.20 lakhs as recurring deposits. Rs.27.89 lakhs as savings deposits, Rs.2.40 lakhs as current deposits and Rs.8.20 lakh as other deposits. Thus, the total amount of deposits is Rs.191.20 lakh. It offers loans on jewels subject to a maximum of Rs.25000/- in each case at the interest rate of 20 per cent. Similarly, mortgage loan is granted Rs.30.000/- in each case at the interest rate of 20 per cent.

For small scale industries, cottage industries and for businessmen on security, it offers a loan for Rs.3000/- in each at the interest rate of 20 per cent. It also offers loans for the monthly income group on personal surety up to Rs.3000/- at the interest rate of 20 per cent. Further it gives loans on the deposits invested subject to a maximum of 75 per cent of the deposit at the interest rate of 2 per cent. As on 30 June 91, the bank has issued jewlel loans to the tune of Rs.146.79 lakhs in 3034 cases and mortagage loan of Rs.4.89 lakhs in 90 cases.

For the depressed classes, salaried people and for business and industrial community, loans are given on guarantee basis. A loan of Rs.15.61 lakhs has been sanctioned in 713 cases under these categories

Total investment of the bank as on 31 March 92 was as follows[44]:

1.	Current Account	Rs.	6.27 lakhs
2.	Savings Account	Rs.	1.32 lakhs
3.	Fixed Account	Rs.	2.09 lakhs
4.	Indra Vikas Certificates	Rs.	0.50 lakhs
5.	Kissan Vikas Certificates	Rs.	0.25 lakhs
6.	Share capital of other Co-operative societies	Rs.	0.63 lakhs
7.	Share Certificates	Rs.	46.49 lakhs
8.	Reserve Fund	Rs.	3.42 lakhs
	Total		60.97 lakhs

Achievements of the bank from 1980-81 to 1990-91 are tabled in *Appendix-8.*

The Chengalpattu District Co-operative Supply and Marketing Society

The Chengalpattu District Cooperative Supply and Marketing Society was registered on 28 August 1942 and it started functioning on 30 August 1942[45]. It has a total of 621 'A' class members (44 individuals, 576 primary stores and societies and Government 1) and 27,173 'B' Class members. The share capital of `A' class members are Rs.11,81,424.31. (Individuals Rs.19,800/- primary stores ans societies Rs.1,90,150 and Government Rs. 9,71,474,31.) and 'B' class members are Rs.2,81,030/-

Working capital of the society is Rs.1,12,75,169.37. A super market and four mini super markets are the other units of the society. Besides, the society runs seven branches, three departmental stores, 35 retail shops and a Janatha shop. 100 link societies under Rural Co-operative Societies and 1735 link societies under Village Shop programme are under its roof.

Taluk Cooperative Marketing Societies

The Ponneri taluk Co-operative Marketing Society was registered on 22 May 1942 and it started functioning on 9 June 1942 with 18 members. There are six primary marketing societies under its control. The area of operation of the societies comprises 1590 villages. Produce is, however, received only from 162 villages. Member societies are 382 in number while individual and other members account for 16542. The six taluk Co-operative Marketing societies are functioning at Sriperumbudur, Madurantagam, Tiruttani, Tiruvallore, Ponneri and Saidapet. The paid up share capitals of societies from the government is Rs.7.57 lakhs, of societies Rs.1.89 lakhs, of growers Rs.2.89 lakhs and of other Rs.1.20 lakhs. Working capital of the societies works out to Rs.21.59 lakhs, while reserve fund and others account for Rs.4.78 lakhs[46].

Co-operative Sugar Mills

The Madurantakam cooperative sugar Mills at Padalam was registered on 4 December 1955 and it started functioning on 18 March 1961. At the time of inception, the Sugar Mills had 624 members and the share capital was only Rs.50 lakhs. During the year 1970-71, the membership rose to 4388 and the share capital to Rs.94.72 lakhs and it produced 15005 metric tonnes of sugar. The membership and share capital of the Mills in 1990-91 are 15106 and Rs.207.3 lakhs respectively. The activities and achievements of the Madurantakam co-operative sugar mill at Podalam and Thiruttani Co-operative sugar mills at Thiruvalangadu. are dealt in greater detail, in the chapter on INDUSTRIES[47].

Handloom 'Weavers' Co-operative Societies

The Kancheepuram Handloom Weavers' Co-operative society was started in the year 1941 for helping the weavers of the district. Following this a number of weaving societies were started one after another. The Manampalty Handloom Weavers' Cooperative society was started in the year 1941 with 101 members. The Kancheepuram Kamatchiamman Silk Weavers Society was started in the year 1955. Kancheepuram Tiruvalluvar Silk Weavers' Cooperative Society was registered on 24 December 1962 and it started functioning on 6 March 1962. Pallavan Silk Co-operative Society was registered on 24 February 1968 and it started functioning on 26 March 1968. The total number of Handloom Co-operative societies in district is 162[48].

The achievements and activities of these Societies are dealt in the Chapter on INDUSTRIES.

Milk Producers' Co-operative societies

The Chengalpattu District Cooperative Milk Producers' Union was started in the year 1927 and this was the first milk supply co-operative society in India. This is a unique credit to this district. The district has 429 Milk Co-operative societies. Of these 375 are Milk producers Co-operative societies two are Milk supply Co-operative societies 35 are milk consumers co-operatives and 17 are ladies milk production co-operative. The total number of membership is 1.16 lakhs and average milk production per day is 47000 litres.

Number of societies participated in the plan schemes implemented, under benefited, and amount invested to such societies are tabled below:

Year of Invest-ment	*No.of Societies benefitted*	*Amount invested in Rupees*
1969-70	5	30,000/-
1970-71	2	10,000/-
1971-72	1	5,000/-
1972-73	2	10,000/-
1973-74	5	25,000/-
1974-75	10	49,000/-
1975-76	6	30,000/-
1976-77	25	1,05,000/-
1977-78	9	50,000/-
1978-79	3	10,000/-

Kancheepuram Kamatchiamman Co-operative Spinning Mill

Kancheepuram Kamatchiamman Cooperative Spinning Mill was registered on 4 July 1961. The total number of spindles installed are 25080. There are 312 workers employed in the Mill. Latest position of membership and paid up share capital are tabled below:

	No.of members	*Paid up share capital(Rs.)*
Weavers' Cooperative Societies	193	5,75,900/-
Other Cooperative Societies	75	3,51,400/-
Individual	394	1,38,000/-
Government	1	68,64,000/-
Total	863	79,29,300/-

Reserve and other funds account for Rs.68.54 lakhs, while the Working Capital from Kancheepuram Co-operative Central Bank is Rs.55.40 lakhs.

The Chengalpattu District Co-operative Printing Press

Total number of members enrolled for the Chengalpattu District Co-operative Printing Press is 390, of which societies account for 295 and individuals 95. Paid up share capital of the societies accounts for Rs.0.33 lakh while share of the individuals works to Rs.0.02 lakh. Reserve fund and other funds account for Rs.2.36 lakh. The working capital of the Press is Rs.4.07 lakh. The value of the machineries and other assets of the Press is Rs.3.85 lakh.

Co-operative Housing Societies in Chengalpattu-MGR District

In Tamil Nadu, the need to have a meaningful programme for construction of houses was felt even as early as 1924. The housing co-operatives, *viz.,* ordinary building societies with the object of granting loans to individual membrs of these societies repayable in a period of 20 years for construction of new dwelling houses, were soon started. In 1947, the Government ordered the starting of cooperative housing societies in all the urban areas. As a result, Housing Committees were constituted in each municipal and major panchayat area for selection of sites, and organisation of co-operative housing societies for construction of not less than 100 houses in each municipality and major panchayats. On the encouragement and assistance given by the Government several types of societies, *viz.,* house construction, house building, townships, etc., were started all over the State[49].

Up to 1964, the State Government placed state funds at the disposal of the Registrar for Housing for sanctioning loans to individual housing cooperatives. There after the Government of India sponsored various schemes such as Low Income Group Housing Scheme, Middle Income Group Housing Scheme and Industrial Housing Scheme.

Under this scheme, different types of housing co-operative in the State were given loans for construction of new dwelling houses. Now various schemes like Rural Housing scheme, L.I.G., and M.I.G Housing scheme in rural areas, urban Housing scheme, SHUPRA (Shelter Upgradation Scheme for Rural Areas) have gained momentum. Consequently, the housing cooperatives have made commendable progress.

There are 73 Housing Co-operative societies functioning in this district with the aim of providing loans for construction of new houses /purchase of ready built house and extension of the existing houses. At present, 13 Taluk rural housing Co-operatives societies, 5 house site Co-operative societies, 3 Industrial housing societies, 1 Co-operative house building Society, 7 Cooperative house construction societies, 14 Co-operative housing societies and 30 Co-operative Building societies are functioning in this district[50].

Loans are being sanctioned to weaker section with 50 per cent subsidy for construction of houses etc. Insurance facilities are also being provided for the houses constructed through Co-operatives.

Statistical information regarding their membership, share capital, working capital, incentives given for the development of housing, number of houses constructed, number of beneficiaries and loans provided by various Housing Co-operative societies in the district are given in the table below :

Data on Membership, Share Capital and other details for the years 1980-81 to 1990-91

		1980-81	1981-82	1982-83	1983-84	1984-85
1.	No.of Membership	37095	40168	43375	43506	45255
2.	Share Capital *(Rs. in lakhs)*	109.87	102.45	134.24	145.62	159.54
3.	Working Capital *(Rs. in lakhs)*	1096.77	1234.42	1367.82	1467.87	1571.60
4.	Incentive given for the Development of Housing	—	0.15	2.71	2.29	11.25
5.	No. of houses constructed and allotted to members	803	1047	662	953	839
6.	No.of Beneficiaries	3530	4137	3501	4267	4044
7.	Loans provided by Housing Co-operatives in this District	294.95	250.87	299.93	356.48	290.69

		1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
1.	No.of membership	46378	48221	48230	52643	58167	69449
2.	Share capital *(Rs. in lakhs)*	175.00	195.33	217.60	257.98	282.72	329.51
3.	Working capital *(Rs. in lakhs)*	1725.98	1989.39	2217.10	2644.16	2916.11	3196.35
4.	Incentive given for the Development of Housing	1.00	2.82	—	0.26	0.99	1.23
5.	No.of houses constructed and allotted to members	973	1319	1023	1104	1265	1549
6.	No.of Beneficiaries	3900	4547	4450	5213	5681	6284
7.	Loans provided by Housing Co-operatives in this district	278.11	398.41	407.02	465.39	453.63	590.16

Number of various types of Co-operative Societies functioning in the district[51]

1.	Co-operative Societies under the control of Registrar of Cooperative Societies	-	767
2.	Milk Producers' Cooperative Societies	-	1002
3.	Khadhi and Village Industries Cooperative Societies	-	69
4.	Handloom Cooperative Societies	-	137
5.	Co-operative Housing Societies	-	157
6.	Animal Husbandry Cooperative Societies	-	65
7.	Industrial Cooperative Societies	-	99
8.	Agro Engineering Cooperative Societies	-	12
9.	Cooperative Sugar Mills	-	2
	Total		2310

Agriculture all the world over requires capital. The great source of capital for the Indian agriculturist is the village money-lender, and if the terms on which he lends money are reasonable, no better agency could be devised. But, owing partly to the tradition of epochs of insecurity and partly to the indefinite characteristics of the oriental imagination, the terms on which the money-lender provides capital have always been exorbitant, and the evil has been exaggerated by the severely literal manner in which our courts have had to interpret his conditions. To supplement the money lender is impossible, but anything which can be done to encroach upon his monopoly by the supply of capital from other sources, or to lessen the demand for his money by the development of thrift, may fairly be recognised as having a claim upon the attention of the State[52]. In December 1904, Sir Frederic Nicholson sent up a scheme for the establishment in the Madras Presidency of an Agricultural Bank on the lines of the Agricultural Bank in Egypt[53].

The system of making loans to ryots for agricultural or other land improvement purposes has made desired progress. In 1907, in order to ensure that the applications for loans were scrutinised and disposed of with increased promptitude and that accounts were correctly and accurately kept, Collectors were authorised to appoint in anticipation of sanction, additional staff for the special work of attending to loan applications in accordance with a sliding scale, which allowed clerks, Revenue Inspectors, Deputy Tahsildars and Tahsildars to be employed depending on the number of applications for loans received. The money limits up to which Tahsildars and other local officers were empowered to sanction loans without reference to higher

authority were also raised and all classes of such officers were instructed to disburse loans, whenever practicable, during their tours, direct to the borrowers in the Villages. In 1906, a Special Deputy Collector was for the first time appointed in Chengalpattu for the sole purpose of dealing promptly with the applications for loans in that district. In order to prevent the loans taken by ryots, from being wasted on unsuccessful wells and obtain a survey of the sub-soil resources of the tract, two boring parties were made to work under the Deputy Collector. In 1908, another Special Deputy Collector was temporarily appointed for about a year to promote the demand for loans. He was instructed to visit villages, to explain to the ryots the advantages of the Government system of loans and to see that all applications for loans were promptly and expeditiously disposed of. The result of these measures was shown in the large increase in the total amount of State funds advanced to ryots. The total amount of loans disbursed during the five years ending 1909-1910 was Rs.35.16 lakhs as against Rs.18.21 lakhs in the previous five years showing that the amount of State aid thus granted had nearly doubled. Evidently, there was substantial measure of protection against scarcity in years of defective rainfall while enabling the ryots in all years to grow more valuable crops than would be possible on lands not supplemented with well irrigation[54].

Tamil Nadu Cooperative State Land Development Bank Ltd

In the third decade of the century, a number of land mortgage banks in the Madras Presidency were sponsored by the Government. These land mortgage banks came together and organised in 1929, an apex body called the Madras Cooperative Central Land Mortgage bank. Later, with the shift in the concept of lending, these lending mortgage banks became land development banks and the apex bank was renamed in 1969 as Tamil Nadu Cooperative State Development Bank.

The long term cooperative credit movement is a two tier federal structure, with a net work of 181 primary banks distributed througout Tamilnadu and the financing bank at District level and head office at Madras. The funds required by the primary land development banks for advancing loans to farmers are provided by the State Land Development Bank through its branch offices functioning in each district. Powers have been delegated to primary land development banks to sanction loans upto Rs.16,000/-. Loans exceeding Rs.15,000/- and upto Rs.15,000/- are sanctioned by the branches and subsequently ratified by the Head Office.

To facilitate expeditious disbursement of loans to farmers, State Land Development Bank has arranged with the district cooperative central banks for providing suitable cash credit limit to primary land development banks on the guarantee of State Land Development Bank. The primary land development banks disburse the loans in the first instance and then obtain

reimbursement from the branch of State Land Development Bank, This system works well[55].

The first cooperative Land Development Bank in the Chengalpattu district was registered on 29 April 1927 and started functioning on 6 May 1927 at Keelacheri. The Bank has now been shifted to Poonamallee and is working in the name: "The Poonamallee Land Development Bank". Another Land Development Bank was registered on 31 August 1939 at Ponneri. Now Chengalpattu district branch is functioning at Kancheepuram. This branch controls the entire district. On 31 December 1971, there were 18 cooperative Land Development Banks. Subsequently,the Ramakrishnapet Land Development Bank was merged with Pallipet Land Development Bank, Sriperumbudur Land Development Bank was merged with Poonamallee Land Development Bank and Chittamur Land Development Bank was merged with Madurantakam Co-operative Land Development Bank. As on 30 June 1987, 15 Cooperative Land Development Banks are functioning in the Chingalpattu District. They are functioning at Kancheepuram, Uthiramerur, Walajabad, Poonamallee, Chengalpattu, Madurantagem, Saidapet, Ponneri, Gummidipoondi, Ellapuram, Thiruvallur, Kadambathur, Tiruvalangadu, Tiruttani and Pallipet[56]. All the loans are granted under Massive Programme and IRDP/AL for the welfare of the weaker sections of the Society.

The Chengalpattu Co-operative Primary Land Development Bank Limited

The Chengalpattu Cooperative Primary Land Development Bank commenced its operation on 6 May 1927. It deals with the entire taluk of Chengalpattu and it implements all banking programmes assigned to it. The details of loans advanced to big and small farmers under different schemes from 1981-82 to 1991-92 are given in *Appendix-9.*

The Ellapuram Co-operative Primary Land Development Bank Limited, Uthukottai

The Ellapuram Cooperative Primary Land Development Bank commenced its operation on 3 January 1970. Its programmes cover the entire Uthukottai Taluk which consists of 79 villages. Loans advanced to farmers under different schemes from 1981-82 to 1991-92 are furnished in *Appendix-10.*

The Gummidipoondi Co-operative Primary Land Development Bank Limited

The Gummidipoondi Cooperative Primary Land Development Bank Limited commenced its operation on 26, January 1970. The area of operation of the bank is the entire taluk of Gummidipoondi. The particulars of loans advanced to the farmers from 1981-82 to 1991-92 are given in *Appendix-11.*

Kadambathur Co-operative Primary Land Development Bank

Kadambathur Cooperative Primary Land Development Bank commenced its operation on 17 January 1970. Its area of operation is the entire Kadambathur Panchayat Union which consists of 73 villages. These villages are very much benefited by the schemes of the above Bank. Details of loan advanced to farmers under different schemes from 1981-82 to 1991-92 may be seen in *Appendix-12.*

The Kancheepuram Co-operative Land Development Bank Limited

The Kancheepuram Cooperative Land Development Bank started its operation on 29 January 1925. It covers the entire block of Kancheepuram. Details of loans advanced to farmers under different schemes from 1981-82 to 1991-92 are shown in *Appendix-13.*

The Madurantakam Co-operative Land Development Bank Limited

The Madurantakam Cooperative Land Development Bank started functioning from 24 June 1927. The entire taluks of Madurantakam and Cheyyur are covered by the programmes of the banks. The particulars of loans advanced to farmers under these programmes from 1981-82 to 1991-92 are given in *Appendix-14.*

The Pallipet Co-operative Land Development Bank Limited

The Pallipet Cooperative Land Development Bank commenced its operation on 14 March 1970. It covers the entire area of Pallipet and R.K. Pet blocks[57]. Details of loans sanctioned under various scheme from 1981-82 to 1991-92 are shown in *Appendix-15.*

The Ponneri Co-operative Land Development Bank Limited [58]

The Ponneri Cooperative Land Development Bank Limited started functioning from 30 October 1939. It covers the Minjur and Sholavaram blocks comprising 204 villages. Details of loans advanced to the farmers under different schemes from 1981-82 to 1991-92 are shown in *Appendix-16.*

The Poonamallee Co-operative Primary Land Development Bank Limited [59]

The Poonamallee Cooperative Primary Land Development Bank commenced its operation on 6 October 1927. Its operation spreads over entire Sriperumbudur taluk. Particulars of loans advanced to the farmers under different schemes from 1981-82 to 1991-92 are shown in *Appendix-17.*

The Saidapet Co-operative Primary Land Development Bank Limited [60]

The Saidapet Cooperative Primary Land Development Bank commenced its operation of 15 April 1937, It is having jurisdiction over the entire taluk of Saidapet. Details of loans advanced to farmers under different schemes from 1981-82 to 1991-92 are given in *Appendix-18.*

The Tiruttani Co-operative Land Development Bank Limited

[61]The area of operation of this Bank is the entire Tiruttani block, covering 24 villages. Its programmes are successfully implemented in the villages as assigned to it. Loans advanced to the farmers under different schemes from 1981-82 to 1991-92 are shown in *Appendix-19.*

The Tiruvallure Co-operative Primary Land Development Bank Limited

[62]The Tiruvallure Cooperative Primary Land Development Bank commenced its operation on 11 August 1960 covering the whole area of Ikkadu and Poondi blocks. Details of loans advanced to the farmers under different schemes from 1981-82 to 1991-92 are given in *Appendix-20.*

Thiruvalangadu Co-operative Land Development Bank

Tiruvalangadu Cooperative Land Development Bank commenced its operation from 17 January 1970. It covers the entire block of Tiruvalangadu. The particulars of loans advanced to farmers by this bank under different schemes from 1981-82 to 1991-92 are given in *Appendix-21.*

The Uttiramerur Co-operative Land Development Bank

The Uttiramerur Cooperative Land Development Bank commenced its operation on 9 January 1970. It covers the entire taluk of Uttiramerur, which consists of 121 villages. Details of loans advanced to farmers under different schemes from 1981-82 to 1991-92 are shown in *Appendix-22.*

The Walajabad Co-operative Land Development Bank Limited

The Walajabad Cooperative Land Development Bank commenced its operation on 15 January 1970. It covers the entire block of Walajabad. The particulars of loans advanced to farmers under different schemes from 1981-82 to 1991-92 are shown in *Appendix-23.*

National Bank for Agriculture and Rural Development (NABARD)

NABARD, as an apex institution, for agricultural and rural development, is providing refinance to various agencies for promoting agriculture and allied activities in the country. In Tamil Nadu, for the past two decades, the National bank had refinanced Rs.894.63 crores. The cumulative disbursement in respect of Chengalpattu-MGR district for the period ended 31 March 1991 was Rs.76.17 crores[63].

As against 40 National bank assisted on going-schemes in 1979-80, the number of schemes as on 30 September 91 leaped to 210 in Chengalpattu-MGR district. Besides this, National Bank is extending automatic refinance facility also for the financial assistance provided under IRDP, NPBD, FM and also for development of non-farm sector activities.

NABARD plays a major role in the development of economy in all districts. Its contribution is considered especially in the spheres of agriculture and rural development. Between 1986 and 1990, National Bank has

implemented pilot project for strengthening credit delivery system which has no doubt increased the disbursements, repayments, recycling and diversion of credit in the district. In fact, it was the first of its kind in the State and it was founded by World Bank. The Project came to a close in the district on 31 December 1990. But, this has been followed in other districts also.

The project aims at strengthening the credit delivery system with an objective of ensuring proper delivery of credit by banks and proper utilisation of credit by the borrower, which in turn ensures, income generation and prompt repayment of the loan. The project seeks to achieve sustained improvement in the existing credit delivery system through intensive and purposeful orientation training and continuous guidance to the staff particularly of field functionaries of all lending institution in the pilot district.

The objectives of the project are : to strengthen the credit delivery system at the grass root level; to increase need based training for field staff of all lending institutions; to intensify contacts between farmers and field functionaries; to introduce structured work activities and guidelines for performance of field funtionaries; to ensure timely and sufficient supply of credit and correct utilisation of loans and repayment there of to facilitate recycling of funds; to provide appropriate relief to farmers who have become defaulters for reasons beyond their control; to enable them to pursue their production activities; and to test the effects of the revised and improved guidelines of organisation and structured working procedures.

It is but evident that the success of the Project would help developing a programme to clear the chronic overdues. The new credit delivery system emerging there after would pave way for financing agriculture and rural development in the country. This project is thus an experiment in search of a more result oriented and dependable system, and it stands as a credit delivery system for the betterment of country's rural mass. This is an example and not a mere experiment.

With the implementation of this project, recovery position will certainly improve substantially, since one year of its implementation, the overdue position has come down to 44.22 in 1987. A recovery level of 75 per cent was expected by June 1988 which has enabled banks to obtain unrestricted refinance fromNABARD and it constitutes a good source of funds for Banks to deploy under Annual Action Plans during the District Credit Plan period of 1988-90. The increase has come about on account of provision of additional manpower, better monitoring system and establishment of closer contacts with borrowers.

The following trends are particularly noteworthy in this district.

The crop loan in the district has increased from Rs.24 crores to Rs.47 crores in the last four years whereas the term loans have gone up from Rs.15 crores to Rs.25 crores. This indicates that there has been a greater exploitation of potential in the district especially in recent years.

The performance of Commercial Banks, Central Cooperative Bank and Land Development Banks under the pilot project for strengthening credit delivery system, from 1985-86 to 1989-90 is tabled below:

	Commercial Banks	*Central Coopera-tive Bank*	*Land Deve-lopment Bank*	*Total*
	(Rupees in crores)			
Loans Disbursed				
1985-86	26.0	4.4	2.0	32.4
1986-87	32.6	8.0	1.4	42.0
1987-88	33.9	11.9	3.1	48.9
1988-89	48.7	20.2	1.9	70.8
1989-90	49.5	12.3	1.4	63.2
A. Loans Recovered				
1985-86	47	44	30	44%
1986-87	51	64	73	56%
1987-88	61	67	29	61%
1988-89	67	95	26	70%
1989-90	57	48	13	53%
B. Amount Recovered				
1985-86	15.1	4.3	1.6	21
1986-87	18.1	7.5	4.4	30
1987-88	29.6	9	1.0	39.6
1988-89	34.8	16	1.4	52.2
1989-90	43.3	10	0.8	54.1

It must be noted here that the member level recovery in respect of Co-operatives was 69 per cent as on June 1989 and 65 per cent as on June 1990.

The National Bank operations in the district cover the financing under SAO and weavers credit limits to Central Cooperative Banks, long term refinance support to all financing agencies and institutional development through Pilot Project.

The amount sanctioned to and utilised by the Kancheepuram Central Co-operative Bank under SAO and weavers credit from 1987-88 to 1989-90 is given below:

		(Rupees in lakhs)	
Limit	*Year*	*Sanction*	*Utilisation*
SAO/NODP	1987-88	690	690
	1988-89	925	925
	1989-90	850	744
Weavers limits	1987-88	1130	906
	1988-89	1275	1072
	1989-90	1451	1119

Under long term refinance support, an amount of Rs.831 lakhs, Rs.870 lakhs and Rs.985 lakhs are found to have been availed of respectively, by Commercial banks, Central Cooperative Banks and Primary Land Development Banks in the district in the last three years.

Agency-wise drawal of long term refinance from 1987-88 to 1989-90 is tabled below:

Agency	*1987-88*	*1988-89* (Rupees in lakhs)	*1989-90*
Cooperative Banks	607.872	619.825	758.034
Central Cooperative Banks	69.880	89.952	116.279
Land Development Banks	153.484	163.795	110.279
Total	831.236	869.572	984.549

Details of ongoing schemes

Presently, there are 213 ongoing schemes with a refinance support of Rs.1717 lakh implemented by various Commercial banks, Cooperatives and Land Development Banks. The undrawn commitment was Rs.832 lakh as on September 1990. The number of schemes has been increasing in the district over the past few years. From 42 schemes as on June 1986, the schemes have risen to 213 as on September 1990. The schemes include 22 varieties of investments such as minor irrigation, land development, horticulture, dairy, poultry, sheep, floriculture, farm forestry, etc. Excepting the schemes implemented by the Land development Bank and Central Cooperative Bank, most of the schemes are individual schemes for developing farms, etc. This is on account of the predominance of IRDP. Of late, borrowers insist on subsidy for taking up an investment and the banks

are unable to push schematic lending other than that which meant for big farmers. As already seen, more than 2.5 lakhs of holdings are less than one hectare and schematic lending for these groups will be difficult and they need more. There is a concentration of dairy development and sheep rearing in schematic and IRDP lending, beause they are the ventures that could be taken up by the marginal farmers and agricultural labourers without any training inputs. The IRDP is at present giving thrust to ISB Sector, which could reduce the demand for sheep and dairy.

Eligibility of banks to draw refinance

The category-wise eligibility of major banks for the purpose of drawal of refinance is given below:

Name of the Bank	*Category*			
	I	*II*	*III*	*IV*
Indian Bank	28	10	6	16
Indian Overseas Bank	4	1	10	13
Canara bank	6	3	2	7
State Bank of India	-	4	11	2
Syndicate Bank	-	1	3	1
Bank of Baroda	-	4	-	-
Other Banks	2	-	13	7
Primary Land Development Bank	-	-	3	12
Total	40	23	48	58

The total eligible refinance of all agencies for the year 1990-91 is estimated to be Rs.152 lakhs, The agency-wise break up is : Commercial Banks Rs..1300 lakhs, Central Co-operative banks Rs.70 lakhs unrestricted but limited to this schemes IRDP Target and Primary Land Development Bank Rs.150 lakhs which make a total of Rs.1520 lakhs. Particulars of agency-wise drawal of Refinance in the district from 1987-88 to 1989-90 are tabled in *Appendix-24.*

The long term lendings are broadly classified into two categories as Minor Irrigation and Non-Minor Irrigation purposes and let both under Normal lending Programme and NABARD assisted schemes[64]. NABARD assisted schemes cover all Minor Irrigation schemes such as digging of wells, installation of pump sets, laying of pipelines and all other diversified purposes such as farm mechanisation, animal husbandry, plantation and horticulture.

Massive programmes and IRDP cover all the above needs of Small and Marginal farmers[65]. Loans so advanced to farmers from 1983-84 to 1990-91 the Agency-wise performance under Annual Credit Plan (ACP) the activity

wise performance during 1990-91 and 1991-92, the Agency-wise recovery performance during 1990-91, activity wise details of National Bank's refinance and PLP Projection for 8th Five Year Plan are given in under the *Appendix-25.*

Insurance Companies

General Insurance Corporation of India (GIC)

The General Insurance Industry was nationalised in the year 1971 and the Act came into force in 1973. Accordingly, the General Insurance Corporation was formed by the Government of India with four subsidiaries of which United India Insurance Company Limited is a flag company for the entire south with the head office at Madras.

The object of nationalisation is to carry the message of insurance to the common man in the society besides carrying business operation of the insurance of the other sector. With this aim and view Divisional Offices and branch Offices were opened in each district throughout India.

The Divisional Office at the Temple town, Kancheepuram was started in the year 1985 with jurisdiction over the entire Chengalpattu-MGR district. This Divisional Office is predominantly rural based. The main composition of insurance business in the district is from high level industries like Hindustan Motor Limited, Tiruvallore and medium level and small scale industries comprising various units in Chengalpattu and Saidapet. Besides these, the Madras Export Processing Zone was started with the patronage of State Government at Tambaram, where lot of industries are flourishing. All these industries are covered by insurance policies. Indian Bank which is the lead bank in this district is advancing for this rural sector, particularly cattle and other assets under IRDP scheme with proper insurance coverage. Besides this, the cooperative institutions are also making huge advances for the upliftment of economically weaker sections of the society.

Above all, Sarvajana Seva Farm the prestigeous international organisation and association based on the Gandhian and Vinobhaji's policies and principles is also functioning. This is an international organisation with headquarters at USA with many donor countries. It achieves the purpose, by promoting and supporting Integrated Rural Development Programme through carefully planned activities. The United India Insurance Company Limited caters to the insurance needs of all such organisations.

The objectives of the Life Insurance Corporation is to mobilise the savings of the people by way of life insurance premium and with the investible funds generated out of it, to contribute towards the economic development of the Nation. It also makes life insurance protection available to various segments of population. Life Insurance Corporation is marketing group insurance schemes, which are deviations from insurance of the classes to insurance of the masses. Moreover LIC also grants loans to policyholders

for construction/purchase of houses subject to certain terms and conditions as part of its endeavour to provide shelter to needy people.

LIC organisation

Kancheepuram, Tiruvellore, Chengalpattu, Ponneri and Tiruttani branches of LIC., cater to the insurance needs of the urbanites and semi-urbanites, while Tambaram, Ambattur and Tiruvottiyur are the peripheral branches which cater to the needs of the people in the bordering residential areas, industrial complexes of Madras city and the rural parts adjoining them[66].

Kancheepuram branch of LIC is functioning from the inception of the Corporation *i.e.*, from 1976, the other branches in the District are functioning from the year noted against each:- Tambaram 1983, Chengalpattu-1985, Ponneri 1990, Tiruvellore-1961 and Tiruthani 1991. The progress shown by the branches in Chengalpattu-MGR district in enrolling policy holders is given in *Appendix-26.*

United India Insurance Company Limited

United India Insurance has its Divisional Offices at Kancheepuram and Ambattur. Branch Offices are located at Chengalpattu, Tambaram, Ambattur, Tiruvellore, Red Hills and Avadi. The total collection of premium is Rs.250 lakhs for 1990-91, of which rural based insurance accounts for about Rs.25 lakh. The details are given in *Appendix-27.*

The company is getting a sizeable income of rural premium more particularly from ASSEFA and Indian overseas Bank Master Policies. The programme for Eco-Horticulture is going to be undertaken very soon by M.S. Swaminathan Research Foundation, and they have identified certain blocks in Chengalpattu-MGR District and the farmers are trained. The United India Head Office has also designed a policy for the above scheme.

United India is also administering as "flag company" the Government schemes like Personal Assistant and Social Security Scheme, Rural Hut Insurance Scheme and Solatium Fund Scheme. The salient features of these schemes are narrated below.

Personal Accident Insurance Social Security Scheme (PASS)

"United India" as a Flag Company, is entrusted by the Government of India with the responsibility of administering the PASS Scheme in the four States of the Southern Region including the Union Territory of Pondicherry and Andaman and Nicobar Islands covering altogether 82 districts in Southern Region. This scheme was introduced from 15th August 1985.

When an earning member in the age group 18-60 years belonging to a poor family dies due to an accident (other than accident casued by a motor vehicle) a maximum amount of Rs.3,000/- is payable to the dependants under the scheme, provided the annual family income from all sources is less then Rs.7,200/-. The scheme is operated in close collaboration with the

respective State Governments who, when claim arises make the investigations that are necessary and furnish the required documents for payment of the claim. *United India* has taken a number of steps to create the degree of awareness among the beneficiaries in rural areas.

The scheme does not require payment of any premium or registration. It is enough, if the party concerned files a claim within 180 days from the date of death. Divisional office at Kancheepuram is nominated for this scheme. Up to May 1992 the number of claims settled is 24. The amount settled is Rs.72,000/- and the number of claims repudiated is 39 in this district.

Rural Hut Insurance Scheme for very poor families

Similarly, the Government of India have introduced a scheme called *Rural Hut Insurance Scheme* for very poor families to cover huts and belongings of these poor families in rural areas, with effect from 1 May 1988 and United India as *Flag Company* is entrusted with the administration of this scheme in Southern Region.

The scheme is intended for very poor families in rural areas whose annual income is Rs.4,800/- or less. It covers destruction of huts and belongings by fire and not by any other cause. The amount of compensation payable is Rs.1,000/- for hut and Rs.500/- for belongings. No premium is payable by the beneficiaries and no registration is necessary under the scheme. Claim has to be filed within 90 days from the date of destruction, Up to October 1992, the number of claims settled is 760 and the amount settled is Rs.8,05,259 and the number of claims repudiated is 95 in this district.

Solatium Fund Scheme 1989

With the revision of Motor Vehicles Act, the Solatium Fund Scheme was also revised. Prior to 1 July 1989 this scheme was monitored by Ministry of Surface Transport Wing, New Delhi. Effective from 1 July 1989, the Scheme was handed over to General Insurance Corporation of India and its four subsidiaries. *United India* is governing this scheme as *Flag Company* for southern states on par with PASS and Rural Hut Insurance Scheme.

The compensation payable under the scheme is in respect of the death of any person resulting form a "hit and run" motor accident, a fixed sum of Rs.8,500; in respect of grevious hurt to any person resulting from a *hit and run* accident, a fixed sum of Rs.2,000/-. Up to June 1992, 11 claims were settled. All of them are death claims. The total amount settled was Rs.93,500 and each was given Rs.8,500/- and the claims repudiated was two[67].

National Insurance Company Limited

National Insurance Company Limited, is having only one branch functioning at Kancheepuram. This branch was inaugurated on 26th October

1985. The Company sells different kinds of insurance policies to the public, such as Marine Insurance, Fire Insurance, Motor Insurance, Burglary Insurance, Television Insurance, Fidelity Insurance, and Insurance covering cattle, sheep, goat, poultry, honeybee, sericulture, prawn and pig[68].

The Company has appointed Development Officers, Agents and Marketing Agents who serve as field force. This Company is getting business through banks, financial institutions and corporate bodies. The main sources of premium income are through rural non-traditional insurances. The particulars of amount insured, premium collected, number of lives covered, and number of policyholders enrolled from 1987 to 1991 are given in *Appendix-28.*

The Oriental Insurance Company Limited

The Oriental Insurance Company Limited, has five branch offices functioning at Guindy, Tambaram, Kancheepuram, Tiruttani and Porur. This Company insures all types of residential buildings, factories, small scale units, shops, hotels, machineries, stocks, etc., against the risks of fire, lightning, explosion, implosion damage, air craft damage, storm, cyclone, typhoon, tempest, flood, riot, strike and malicious damage, earthquake and shock. The company also insures fishing vessels, sailing vessels, passenger cargo, etc., against perils of seas[69].

The company also insures all types of goods that are in transit from one place to another against the risks of war, strike, theft, pilferage, civil commotion and all types of motor vehicles against the risks of own damage and third party property and personal injury damage.

Under the Rural Insurance Scheme, the Company insures cattle, agricultural pumpsets, electrical and diesel engines, animal driven carts, Janata personal accident in the age group of 10 to 70 years and GPA in the age group of 5 to 70 years. The business done by all the five branches of the company from 1986to 1991 is detailed in *Appendix-29.*

The New India Assurance Company Limited

The New India Assurance Company Limited is a subsidiary of General insurance Corporation of India. Its administrative set up consists of Regional Offices, Divisional Offices and Branch Offices. The branch offices are the units where the majority of the Insurance business of the company is transacted[70].

In Chengalpattu-MGR District, two Divisional Offices are functioning one at Guindy and another at Kancheepuram. Guindy Divisional Office started functioning on 6th September 1989 and it controls three branches located at Guindy, Tambaram and Porur. Kancheepuram Divisional Office started functioning from 1 July 1987 and it controls three branches which are located at Kancheepuram, Chengalpattu and at Arakonam. Both the Divsional offices

have rural representatives and agents who play an improtant role in marketing of rural insurances and personal insurances, thus extending the benefits of insurance protection right down to the common man.

Guindy Divisional Office, has completed a premium of Rs.182.5 lakhs for the years 1990-1991. Kanchi Divisional Office has completed a premium of Rs.91.1 lakhs for the year 1990-91. The business done by both the Divisional Offices in 1990-91, 1991-92 is tabled in *Appendix-30.*

SMALL SAVINGS

Saving ensures the general well being of the society as well as the individual and is an effective aid to social and economic progress. The habit of savings on the part of the people is responsible for the rise and development of institutions such as banks, life insurance, unit trust, stock exchange, building and loan associations, and co-operative societies. Small saving schemes in their turn, contribute to the various economic activities and they act as a source to the expansion of industries, trade and commerce[71].

Savings no doubt, act as an anti inflationary device. The various National Savings Scheme play important role in mobilising resources for the developmental activities without casuing much hardship to the participants. They help to inculcate the habit of thrift among people and also to curb inflation to a certain extent. Deposit mobilisation and thrift promotion have been the cardinal features of the Small Savings Movement popularly known as National Savings Movement.

The wide range of attractive schemes under Small Savings offered by Government of India satisfy the requirements of both the rich and the poor of both regular savers and big investors. The various Schemes offered are Indira Vikas patra, Kisan Vikas patra, National Savings Scheme Account 1992, Post Office Monthly Income Scheme, National Savings Certificates, Post office Time Deposits five year Post Office Recurring Deposit Accounts, Post Office Savings Account, 15 years Public Provident Accounts, and Deposit scheme for retiring Government and public sector employees. These schemes cater to various needs of the public.

Small Savings as a method for the Sate Government to earn its resources for developmental schemes, caught the fancy, mainly during 1990, when Chengalpattu-MGR district along with many others achieved the target set for it, there by earning incentives. Since then, the target line for incentives eligibility has also been raised to 75 per cent and a greater target allocation also laid for the districts. Attractive prizes like cars and flats and added interest rates and incentive to investors and agents in addition to the already existing tax relief, have made it more popular.

During the year 1991, Chengalpattu-MGR district received Rs.23.90 lakhs as incentive for Small Savings. From this amount projects for drinking water supply schemes, repairing of school sheds and providing amenities and a library for the Institute of Rural Development Studies were undertaken. The particulars of collection under small savings in this district from 1972-73 to 1991-92 are given in the *Appendix-31*.

Consumers Protection Council

Consumers' as a class are a socially disadvantaged category. They may be large in number as every one is sure to be consumer of one kind or another. But they are largely inchoate and yet disorganised. In order to

attend to and redress the grievances of the consumers and to protect their rights, March 15 of every year is celebrated as the World Consumers Rights Day[72].

Chengai District Consumers Protection Council was established in 1991. The aims of the Council are to protect the Consumers' rights in the distribution of essential goods; to protect the welfare of the Consumers while they are using the buses and other public vehicles; to protect the basic needs of the consumers in their residential areas; to protect the consumers from the environmental pollution: to educate the consumers to be aware of their rights; to help the consumers to seek redressal through consumer Protection Act, 1986; and, to publish leaflets and literature on the plight of the consumers in order to inculcate a sense of responsibility in the minds of one and all, who are to safeguard the interests and protect the rights of the consumers and also to conduct seminars apprising the consumers of their rights and also the way to protect themselves.

Within a short span of time, the District Council has played a vital role in protecting the environment, in the welfare of the bus passengers in touring up the Chengalpattu Medical College Hospital, in improving the functioning of the ration shops in the district and in according suitable compensation for the affected consumers.

Currency and Coinage-Coins of the States merged with the Indian Union

Excavations at Kancheepuram brought to light the development of coinage in this region during the ancient times. Among many coins excavated in this region, eight lead coins are believed to be those of the Pallavas. These coins feature the bull and Srivatsa or Nandipada emblem on the top in a similar fashion as found on their copper-plate charter seals[73]. Ramayya dates these coins to 3rd Century A.D. to early years of the Pallava independence[74].

The earliest coins of the Pallavas, a legacy from the Sathavahanas, are indistinguishable from those of the Kurumbas with the symbol of an animal like the horse on the obverse, but there was a gradual development in their form and fabric. Gold and Copper dominated their coinage while there were a few issues in silver. While all of them are thick and dumpy in fabric, the gold issues are relatively thin. The dominations are not clear but the copper coins of different weights, suggest that there were at least two denominations of copper fanams. Most of their issues are cast and die struck and well executed. Some of the specimens are as good as those of the nineteenth century mints.

On most of the coins a *maned lion* appears on the obverse. This royal emblem is seen on most of the Pallava copper plate grants and on the walls of the temples built under royal patronage. Nandi, the sacred bull, a revered symbol of Saivism is also displayed occasionally on some issues, probably

commemorating such important events as the conversion of Mahendravarman from Jainism. Sometimes a two masted ship, such as the one seen on some Sathavahana issues, is also depicted indicating the sea-faring interests of the Pallavas. These coins were in circulation in this region during the ancient period.

Varieties of the bull type coins in copper published by Desikachari said to have been found in and around Mahabalipuram area have the bull on the obverse and a number of devices on the reverse, the two masted ship, the Svastika, the lamp, the chakra, the bow, the fish, the chaitya, etc., and other emblems often occurring in the Andhra coinage, proving thereby the influence of Andhra coinage on the Pallava currency[75]. A number of inscriptions found in this district refer to various denominations of coins. The Pallava epigraphy throws much light on the coins and currency.

The inscriptions of Sri Varadarajaswami Temple at Kanchi furnish us with interesting information regarding the coins that were current at various times. It is well known that gold coins were issued by many of Chola kings. The *madai* or the *pon* was the standard gold coin of the realm and it was equal to one *Kalanju* or 70 grains of gold. The kasu was exactly half of this. The Madurantakam madai perhaps first issued by Madurantaka Uttama Chola, was current in the time of Kulottunga-I and it is said to have been equivalent to one *Kalanju* of gold or 9 1/2 *mattu* or two kasus. From the time of Kulottunga-I, many local issues made their appearance. Thus, a gold coin named Bhujabala-Viram-madal is mentioned in a record of this temple by a Chieftain from the Ganga-mandalam who had the title Bhujabala Viran. Unfortunately, nothing is known about the value or the gold content of this issue, though we know that it was current in many parts of the present Chengalpattu-MGR district. Still later, during the time of last kings, the Telugu Choda Chief Gondagopalan's coin was current in Kanchi. It was known as Gandugopalan madai or Pladumadai. In the Vijayanagar days, the coins which were current in this region were the *'panam'* and the *'varahan'* The latter was a gold coin of the average standard, weighing 52.7 grams. One half of the Varahan coin was called Pratapa. The panam was 1/10th of the Pratapa or 1/20th of the Varahan. In several inscriptions, there are references both to the Varahan and the Panam. Thus, during the reign of Krishnadeva Raya the annual income from five villages amounting to 1,500 Varahas were donated to the temple. From another record of the same reign, it may be understood that Panam was also a gold coin[76].

In the modern period, particularly after the arrival of the Europeon Trading Companies in South India it must have been confusing to the newcomer, for, in 1783, there were no less than fourteen different kinds of rupee in circulation. They were those of Masulipatnam, Madras, Jaganaikpuram, Surat, Adoni, Bombay, Arcot, Pondicherry, Calcutta, Bengal, Raichore, Aurangabad and Benares.

A Madras Mint list of March 1793, quotes the following:

Hydery Gold Mohurs	@ 16 Arcot Rs. each
Ahumeedee Gold Mohurs	@ 4 Mysore page each
Shiddahee Half Mohurs	@ 2 -do-
Hydera Pagodas	@ 4 1/2 Arcot Rs. each
Vuroyen Gold Fanams	@16 1/2 per Mysore Pag
Raja Gopaul Fanams	@ 31 -do-
Cotta Gopaul Fanams	@ 33 -do-
Tellecherry Fanams	@ 20 -do-
Sultan Fanams	@ 13 1/4 -do-
Venetians	@ 5 rupees each
Shampoor Rupees	@ 365 100 S. Pags.
Pondicherry Rupees	@ 382 3/4 per 100 Mysore Pags.
Maratha Rupees	@ 4 1/8 per Mysore pag
German Crowns	@ 2 -do-

The rate of exchange between the gold star pagoda, which was the basis of currency and the silver Arcot rupee was constantly fluctuating swing to arrivals of silver or shortage of gold[77].

During the first half of the Seventeenth Century the East India Company got hold on overall important trading centres and decided to introduce English currency in India. They set up a mint at Bombay for minting coins in gold, silver and copper of similar weight and fineness of the Mughal type coins of the Surat mint. They decided to name the gold coins as Carolina in remembrance of King Charles - II, silver coins as Angliana after the name of the country while copper coins were known as Coperoon and the tin coins, as Tinny. In 1672 A.D., the company continued its minting activity and struck coins in silver, copper and tin. Gold coins were not struck. The first coin of the East India Company of Bombay was in copper with the arms of the company above two resettes on one side, two lions in the middle and three ships below on the obverse with the legend reading as Hon Soc AND ENG IND ORI off the flan and the reverse depicting Mon BOMBAYE ANGLIC REGIMIS 1668. The coinage of gold pagodas in Madras was recorded about 1661. Silver fanams with two inter linked C's traditionally assigned to the reign of Charles II (1661-1668) were continued into the 18 century.

The coins of Madras reveal the issue of silver rupees and rare gold Pagoda with the types of Mughal emperor, Aurangazeb as early as 1691 A.D. These coins were struck at Chennapatnam - the native name for Madras. Rupees of the Chennapatnam mint dated 1707 are attributed to the Mughul rulers Bahadur Shah. The coinage of Madras in the eighteenth century

includes the issue of gold Pagodas, with a Hindu deity on the obverse and a granulated reverse with a fine pointed star. Some Pagodas had on the obverse tiny *Three Swami* type (three crowned deities standing). The company issued gold, silver and copper coins in the type of South Indian meteorology. *Three Swami* gold Pagodas with an image of Venkateswara and his two consorts and small silver coins with the figure of Lord Vishnu struck in 1691 are nice specimens of numismatics. New type of Pagoda and double Pagoda with a broad thin flan depicting Lord Vishnu in the crude form on the obverse and a gopuram on the reverse with the value in English and Persian on the side and in Tamil and Telugu on other side were introduced in 1807 A.D. Many coins found with the mint name, of Chennapatnam are attributed to Aurangzeb, Shah Jahan II, Shah Alam II and AlamgirII. Minting of machine made milled coins was started in 1815 A.D. at the Arcot mint. New types of copper coins in the denomination of pice (fulus) doodie (dub) and cash bearing Tamil words *Sri* on the obverse and *Kumpani* on the reverse are found in the South. The Company introduced machine made copper coins of 1,5 and 10 cash denominations in 1802 A.D. These coins introduced in different times by different rulers in the southern parts of India were in circulation in the Chengalpattu region also.

When the British became the overlords in India, they felt the necessity for a universal coinage in 1834 A.D. In 1835 A.D. a new type of gold double mohar was issued with a value of 30 rupees, one muhar of 15 rupees, 10 rupees and five rupees and also silver rupee, half rupee and quarter rupee coins with the head of King William IV on the obverse and the value in Persian, Nagari and English on the reverse.

In the Carnatic about the beginning of the eighteenth century, there were about twenty two mints under the Nawab at important commercial centres like Arcot, St.Thomas and Covelong. The English had mints at Madras and Fort Saint David, the French at Pondicherry and Dutch at Pulicat[78]. Regarding the Dutch who came to India next to Portugueese for trading activities secured the permission of Nayaks of Senjee to build a mint factory at Pulicat in 1610[78A]. It must be noted here that the Dutch were the first to be favoured with the right to mint pagodas of standard weight at Pulicat in 1647. These pagodas had the figure of standing Vishnu under a canopy on the obverse and Nagari legend in the reverse. These pagodas were said to be resembling that of Golgonda pagodas. This mint ceased its importance during the last decade of 17 Century due to downward trend in the trade activities of the Dutch.

The authority of the East India Company was superseded by that of the Crown, following the uprisings of 1857, and thereafter coinage, first issued in 1862 was of purely regal type, the name of the East India Company disappearing from the reverse[79]. During the British period, uniform coinage was introduced in the district. The rupee was later standardised, in 1885 at

180 grains weight. The rupee was divided into 16 annas and anna into 12 pies. The coins in circulation were rupee, eight anna, four anna, two anna, one anna, half anna, quarter anna and one pie pieces. Currency notes in the denomination of one rupee, two rupees, and thousand rupees were in circulation. The only local term for a coin five rupees, ten rupees, hundred rupees in the state and surrounding districts was Panam which meant 1/8th of a rupee. Throughout the period of British rule in India, this system of coinage continued in the district. But the coins introduced by the British were gradually withdrawn after 1957.

Decimal Coinage System

With the introduction of decimal coinage system in April 1957, came the clean easy division of the Rupee into one hundred parts, - the unit being called naya paisa and later just paisa. Later in 1984, the Government of India decided to abolish the one paise, two paise and three paise coins as the minting of such coins was no longer profitable.

At present, we are having five paise, 10 paise, 20 paise, 25 paise, 50 paise, one rupee, two rupees, and five rupees coins in circulations. Regarding currency, we are having one rupee, two rupees, five rupees, ten rupees, twenty rupees, fifty rupees, hundred rupees and five hundred rupees currency notes in circulation.

Trade

The wealth of far-off "ormuz and Ind" had persistantly attracted the nations in the west from the dawn of history. India was a wonderland for the people of the west and they wanted to be in close connection with this land. It was the trade that bound the east and west together. The Roman had a busy trade with India and both overland and maritime routes were taken from the first to fourth century. It abruptly ceased for sometime and from the seventh century it was revived. The Arabs and Muslims captured the trade and carried the Indian wares through Levant to Venice. She held the gorgeous East in fee. The trade and the wealth flowing from it grew enormously in succeeding centuries.

A new era of Indo-European trade by sea, through the Cape of Good Hope commenced towards the end of the 15 century, with the advent of the Portuguese, They were followed by the Dutch (1605-8) the English (1600) and the French (1664) each of whom had formed a trading company. The Portuguese and the Dutch were among the earliest to be ousted from Indian trade in succession. The English and the French survived in the South of India and were often looked in a struggle either as part of their European conflicts or for supremacy interfering often in Indian politics of the times thereby each trying to gain possession at the cost of the other. But their ultimate aim was identical to secure the sole monopoly of trade. In this struggle, the English came out successful and the trade of India became

theirs and India herself her dominion[80]. Before the company started the land management, their main interest was stick in the textiles trade. There is an important report on textile trade by Warren Hastings, who was at the time the Export Warehouse keeper at Fort St.George. Warrenhastings Report in 1771 refers to the new system of procurring cotton cloths in the *fagir* in which Nattars were given an important role. In this report Hastings stated that the head Weavers were called *Nattuwars* (Nattars) and the names of territorial divisions called Payakatt were derived from the names of places where the Nattars resided and where the cloths were gathered for sorting[81].

Right from ancient times as part of Thondaimandalam, the Chengalpattu region developed rich trade along with the other parts of the Tamil country. In the modern period, the British made this region an active centre for trade.

The chief articles of trade in the district were cloth and grains. Though a coastal district, Chengalpattu did not have sea borne trade and the goods were sent to Madras, which was an important centre for trading activities. Inland trade was restricted to surplus grain, handlooms and silk goods, milk, fish, coconuts, salt, casuarina, leather and leather goods. Kancheepuram, the district headquarters was an important centre for rice trade. Some of the larger towns like Tiruvallur, Madurantakam, Chengalpattu etc., were also prominant whole sale and retail trading centres in cloth, grains and other cereals[82].

The trade of the small coast towns had long ago been attracted to Madras and except at the Presidency City, there was no commercial activity along the sea board. Pulicat alone maintained its independence as a trading port until 1864, but in that year, its customs house also was removed and with the exception of an occasional strip loading salt at Ennore or Covelong, the coast of the district was then deserted. Smugglers had, therefore, a large field and periodical alarm of the evasion of customs dues on the Chengalpattu coast and kept the department on the alert. Land trade existed except the local interchange of field produce and the necessaries of life existed only in the unremunerative form of thorough traffic to the capital, while such industries as the manufacture of spirits for local consumption and the planting of casuariana groves for fuel (undertaken by European Capital) belonged rather to the city of Madras than to the district. The salt manufactured for government gave employment to many thousand families, chiefly mirasdars having heriditary rights to the manufacture and the annual outturn was valued at rupees 17,01,739 during the later part of the Nineteenth Century and weaving occupied about 35,662 persons. But, except the finer Muslins of Arnee, and the coloured cloths of Kancheepuram, none of the district manufacturers had more than local repute. Metal-ware and indigo completed the list of the non-agricultural industires. The fresh water fisheries yielded an annual revenue of about 2,293 but, the sea fishery, though yielding

no revenue and not under any kind of official control, was the most important industry. The number of large boats employed was 400 and of fishermen, - chiefly Roman Catholics, 14,000. An extensive trade was carried on in fresh fish, brought into Madras from 20 miles distance on men's heads or in baskets slung on a pole and then exported by rail to Bangalore and other places. The varieties most prized were the Indian mackeral (Scomber Kanagurta) mango fish (Polynemus Paradiseus) mullet, seer (cybium and pomfret (Stoomateus) . Tartles from Pulicat and Oysters from Sadras and Covelong of the district supplied the Madras market[83].

Chengalpattu region had the reputation of being a centre of flourishing trading communities in the ancient times. From the two epigraphs of the time of Gandagopala dated 1241 A.D., it is learnt that the oil merchants who also belonged to a section of the Chettiar community lived in the street named Mummudi Chola-Perun deru and another section of the merchants lived in the street named Kuraiveniapperunderu. A record of 11 Centruy A.D., found at Padavaperumal temple at Kanchi registers a gift to the temple by a leading merchant named Peruvanian Devan Erinjodi *alias* Perurulaladasan residing at the great street of Arunolidevan at Kanchi[84].

There were a sizeable number of Vaisyas who were mostly tradesmen at Kanchi. They are called Chettiars or Nagarattars in Tamil Nadu. There is a separate chettiar street in Vishnu Kanchi. Reputed as principal merchants, they had business connection in different parts of South India. They had mercantile guilds of their own, which traded with foreign countries also[85].

Covelong, Ennore, Armegan, Pulicat and Sadras were the ancient ports found in this district. Covelong, a large salt depot at present was once a place of importance. The salt pans to the west of the village were large and there was some export trade also to some extent[86]. Its fort was demolished in the wars between the French and English during the middle of the Eighteenth Century.

Ennore is a semi-urban area just north of Kattiwakkam, bustling with industrial activity. Pulicat was once the headquarters of the boat building industry[87], and also served as a Dutch settlement for a very long period and it had escaped the danger of Carnatic wars which affected Madras, Cuddalore and Masulipatnam. Dutch founded a factory here in 1600 A.D.

Sadras

This is situated south of Madras and a few kilometres south of Mamallapuram. It was formerly a very important fort with a large trade.It was in fact an important trade centre for Dutch. Ruins of the fort, however, still remain.

The Chengalpattu MGR district situated within a radius of 50 km from the Madras Port, forms a natural hinterland for the Port of Madras. As the port developed, the development at the hinterland centre was stupendous.

Most of the industries engaged in the international trade through port of Madras are located in the Chengalpattu MGR District. It is not an exaggeration that this district is the catchment area for the Madras Port traffic to develop.

Large and medium scale industries that sprung up in Chengalpattu MGR district are namely oil refineries; fertiliser factories; tyres and tubes; industrial and automobile chains; automobile ancillaries; synthetic rubber; granite slabs; teleprinters; leather garments and leather products, manufacturing units; pharmaceuticals; cosmetics; electronics; re-rolling mills; automobiles; dairy products; match factories; heavy engineering goods; thermos-wares; thermal power industries and bicycles.

The development of these indsutries has brought forth the Madras Port to the forefront, since most of the raw materials required for production in these industries and finished products coming out of the times of these industries have to be necessarily handled at Madras Port. Therefore, as the industries grew up, the port also increased its output every year. From a level of two million tonnes in the fifties, the port has handled 25 million tonnes of cargo in the year 1990-91. Notable Progress has been witnessed periodically in this sphere.

Among the development plans envisaged, two most important plans which would help the Chengalpattu MGR District to further industrialisation and development of ancillary industries are construction and commissioning of the Satellite Port of Ennore; and development of container stations in the peripheral zones of the Madras district; these container freight stations have to be necessarily housed in the border area of Chengalpattu MGR District, one in the South near the Madras Export Processing Zone, one in Ambattur and one in Manali would be the areas to commission container freight stations to start with.

These two developments would project Chengalpattu MGR District in greater measure and the day is not far off that the district will play a greater role in affording larger share of traffic through Madras Port[88]. Distribution of Import overseas Cargo, originwise is given in the *Appendix-32* (1986-87 to 1989-90). Trade and Commerce in Chengalpattu MGR District is given in *Appendix-33*. Industries in the district are highlighted in greater detail, in the chapter on INDUSTRIES.

Madras Export Processing Zone

The Madras Export Processing Zone is situated at the National Highways - 45, (NH 45) between Chrompet and Tambaram in Chengalpattu MGR District. It is just five km from Madras (Meenambakam) Air Port and 24 km, from Madras Harbour towards south. Government of India sanctioned the establishment of MEPZ in the year 1984. An area of 98 acres was acquired and developed for locating industrial units under the first phase.

Under the second phase, an additional area of 160 acres adjoining the present area, was acquired. About 350 industrial units in all are expected to function in the zone, ultimately, providing employment to over 70,000 persons and exporting goods valued to Rs.1000 crores in a year, on an average, to various countries. Land, power, water, finance, man power, telecommunications, transport, port facilities and warehouse facilities are made available to the entreprenours[89] setting up industrial units in the zone.

Objectives and activities of Madras Export Processing Zone

The main objective of MEPZ is to earn foreign exchange so as to bridge the gap in the balance of payment position. The objective is to be achieved by affording facilities to industrialists in India and abroad to establish their export oriented industrial units in the zone. A secondary objective arising out of the main objective is to provide employment in such units in the zone manufacturing for export purposes. The zone was sanctioned in the year 1984, and it started its export in March 1986.

List of items of export, volume and turn over

Products manufactured are garments, knit wear, electronic goods namely video cassettes, reed switches, computer software, engineering goods, industrial tyres, precision rubber products, latex gloves, tennis rackets, disposable medical syringes, perfumery, drugs, gold jewellery, artificial flowers, toys, synthetic rutile, liquid printing ink etc.,

Products proposed to be manufactured by the units, constructing factory buildings are textiles, liquid printing Inks, Cotton swabs, printed circuit boards, computer keyboard, switches and computer key boards, cigarettes, steel furniture, granite-handicrafts, resins, cereamic cores, leather products, zinc oxide etc.

Products proposed to be manufactured by other units in the pipeline are internal combustion diesal engine, electric micro motors, cellulose boards, etching machines, industrial knives and helicopters, motor cars etc.

Value of the exports made from 1985-86 to 1991-92 is given below:

Year	*Value* (Rs.in crores)
1985-86	0.54
1986-87	10.05
1987-88	16.41
1988-89	24.04
1989-90	29.56
1990-91	61.32
1991-92	122.47
Total	264.39

Value of exports made from 1 April '92 to July '92 is 43.72 crore. It may be seen that exports during the last two years have doubled the performance achieved during the preceeding year. Exports are made to USA, Canada, UK, France, Germany, Italy, Japan, USSR, Singapore, Middle East, Switzerland, Malaysia, Hongkong, Sweden and Thailand.

Commodity-wise break up of the commodities exported with value

Sl. no.	*Commodity exported*	*Value of the commodity exported in the year, 1991-92*	*Value of the commodity exported from inception (1985-86) up to June 1992* (Rs. in crores)
1.	*2.*	*3.*	*4.*
1.	Garments	58.69	131.44
2.	Engineering	10.89	56.29
3.	Chemicals, Drugs & Medicines	6.87	18.40
4.	Electronics (Hardware) (Software)	35.99	65.78
5.	Leather Products	—	0.95
6.	Plastics & Rubber	7.87	16.17
7.	Toys	0.21	0.72
8.	Artificial Flowers	0.32	1.24
9.	Gems & Jewellery	1.44	3.87
10.	Sports goods	0.19	0.21
	TOTAL	122.47	295.07

Fabrics and accessories, yarn, electronic components for engineering goods, rubber, chemicals for engineering goods, rubber, chemicals for perfumery and drugs, gold, polyster cloth and HDPE for artificial flowers, etc., are imported from various countries. Imports are made from Malaysia, USA, Japan, Italy, Hongkong, UK, Korea, Taiwan, France, Singapore, Sri Lanka, Germany, Pakistan, Holland and Sweden. Value of imports of Capital goods as well as raw materials tabled below, yearwise:

Year	*Value of*		
	Capital Goods	*Raw materials*	*Total*
			(Rs. in crores)
1985-86	0.03	0.40	0.43
1986-87	1.89	7.03	8.92
1987-88	4.06	8.43	12.49
1988-89	9.86	11.74	21.60
1989-90	8.70	19.15	27.85
1990-91	39.55	46.27	85.82
1991-92	14.76	70.45	85.21
Total	78.85	163.47	242.32

Employment

The direct employment provided by the industrial units in the Zone so far is about 7000, of whom about 4,000 are women, most of whom are from the weaker sections. With the recent liberalisations in trade policy, several new concessions have been extended to industrial units set-up in Export Processing-Zones. Some of them in the Export Processing Zone Units may be engaged in manufacture of goods, production of software, horticulture, agriculture, acquacultures, animal husbandry or similar activity. Units engaged in service activities may also be considered on merits. Foreigners and NRIS (Non Resident Indians) can freely invest in the equity of the Indian Company. Even fully owned foreign companies can undertake production and exports in the zones. Free and full remittance of profits on foreign investments is permissible. The foreign equity can also be repatriated.

The Units in the zone are exempted from payment of corporate income tax for a block of five years within the first eight years of operation. Profits from exports are exempted from income tax even there after.

The units are free to store their requirements for production. They may import free of duty, capital goods, spare parts consumables, prototypes office equipment, consumables for office equipment and material handling equipment such as forklifts, overhead cranes etc., required by them for production, provided they are not prohibited items in the negative list of imports. Second hand capital goods may also be imported, subject to certain conditions. A unit may store the capital goods from a domestic leasing company, which can import the capital goods free of duty.

Supplies of capital goods, raw materials etc., to the zone units from the domestic tariff area are exempted from central excise duty, eligible for reimbursement of sales tax paid, Central and State are treated as deemed exports and made eligible for deemed export benefits. Deemed export

benefits are (a) refund of terminal excise duty, Central sales tax and duty draw back (b) exemptions from payments of central excise duty on capital goods components and raw materials supplied and (c) discharge of export obligations if any on the supplier.

The International Price Reimbursement scheme for supply of iron and steel will be available to the unit. The entire foreign exchange realised on exports can be converted into convertable currency at market rates. Units undertaking to export their entire production of goods may be set up in the Zones. However, rejects upto 5 or such percentage as may be fixed by the Board of Approvals may be sold in the domestic tariff area on payment of appropriate duties.

Except in the case of jewellery, diamonds, precious and semi precious stones/gems, motor-car, recorded video and audio cassettes and silver bullion, in other cases, the goods may be sold in Domestic Tariff Area up to 25 per cent of production in value terms, when the use of indigenous inputs is more than 30 per cent in value terms and up to 15 per cent where the use of such inputs is less than 30 per cent. Domestic Tariff Area Sale shall be subject to fulfilment of minimum value addition and export obligation.

Supplies effected in domestic tariff area under global tender conditions or against payment in foreign exchange, supplies against Advance licence and other import licences and supplies with the permission of the Development Commissioner to other EOVS/EPZ Units shall be counted toward fulfilment of the export obligation. A unit may export goods manufactured by it through an Export House/Trading House/Star Trading House.

With the permission of the Development-Commissioner of the Zone, the Units may sub-contract part of their production for job work to Units in the Domestic Tariff Area. The Units set-up in the Zones are eligible for concessional rent for lease of industrial plots and standard design factory buildings for a period of three years. Net Foreign exchange earned by a Unit in the Zone can be clubbed with the NFE of its parent/associate Co., in the Domestic Tariff Area for the purpose of according Export House, Trading House or Star Trading House status for the latter[90]. Tamil Nadu Government provide capital subsidy at 15 of fixed assets with a monetary ceiling of Rs.15 lakhs. The subsidy is however given at 20 per cent in the case of electronics and leather industries. The maximum is Rs.35 lakhs in the case of electronics and Rs.20 lakhs in the case of leather.

Wholesale Iron and Steel Market at Sathangadu

* Sathangadu near Manali is now proud of having a wholesale iron and steel market complex established at a cost of Rs.17 crores on 203 acres by MMDA. It is functioning from 8th March 1991. It contains 850 plots with

* *Tamil Arasu,* April & May 1991.

varying sizes, one ground to three grounds. Caters the both small and petty steel trades from George Town at Madras. The big traders like Steel Authority of India (35.51 acre) and Vishakapatnam Steel Project (13.50 acres) are provided with large area. This action of the government has eased the conjestion to some extent in the already overcrowed George Town area.

Fairs and Festivals

Festivals

The Chengalpattu-MGR district which skirts the Chennai City had been an active centre of social gatherings and festivals. People of this district celebrate about 448 festivals in a year. The district has 13 taluks and each taluk claims its share, - Kancheepuram claiming the maximum of 125 while Madurantakam celebrating the minimum of four. It is estimated that a little over forty lakhs of people witness the celebration of these festivals. No doubt, local festivals attract quite a huge crowd. It is a matter of common knowledge that the local festivals are turned to advantage by the trading community who hold their fairs in the localities during the festival season.

Though in the matter of number of festivals, Tiruvallur taluk ranks next to Kancheepuram, it is Tiruttani that runs a close second in the matter of attendance. The reason is not far to seek for. In Tiruttani is situated the famous hillock temple of Lord Muruga. The monthly Krithigai except the one in the month of Adi attracts a crowd of about 25,000 on each occasion, while the Krithigai festival in the month of Adi which is one of the most important festivals in the district draws a crowd of not less than four lakhs not only from Chengalpattu-MGR district but from Madras City also. When the festival of float (Theppothsavam) is celebrated here for three days during this festival, not less than a lakh of Kavadis bedecked with flowers and carrying flowers and other offerings for worship such as milk etc., brought by devotees, attract people all over Tamilnadu and other neighbouring states. The late Sri T.M.Krishnaswami Iyer, popularly known as Thiruppugazh Mani commenced the practice of drawing on the 31 of December,thousands of devotees of Lord Muruga to this temple, singing Thiruppugazh songs, while ascending the hill step by step. This has now developed into a regular and popular festival known as "Padi Utsavam". The crowd on this occasion is estimated at not less than one lakh.

Of the 448 festivals, eight Christian festivals and 4 are Muslim festivals. There is a Jain festival also. These festivals infact generate economic activity in a greater measure.

The festivals are spread over twelve months commencing from the Tamil month of Thai. (January-February) and ending with 'Margazhi' (December-January). The figures given below denote the number of festivals conducted seasonwise, in the district.

No.of festivals	Season	Estimated attendance
41	January-February (Thai)	5,67,550
22	February- March (Masi)	6,99,120
25	March- April (Panguni)	2,52,900
91	April- May (Chithirai)	3,36,912
56	May-June (Vaikasi)	3,35,110
23	June-July (Ani)	1,17,350
74	July- August (Adi)	5,76,005
35	August- September (Avani)	1,09,165
28	September- October (Purattasi)	1,50,000
18	October- November (Iyppasi)	2,23,075
14	November- December (Karthikai)	4,14,275
21	December- January (Margazhi)	2,48,500
448		40,29,962

Fairs

Village fairs as a necessary appendage to celebration of religious festivals, have come to stay at least for more than half a century. They are temporary markets where all varieties of merchandile are offered for sale. Besides these seasonal fairs, there are weekly fairs which do not owe their existence to any religious festival, where agricultural produce, consumer goods, livestock etc., would be available for sale. The rigidity of the organised permanent markets is not observed here, but the buyers get ample opportunity to drive a hard bargain.

The Chengalpattu-MGR District held 22 fairs regularly patronised by 36,550 people during sixties. These include annual fairs, weekly fairs and daily fairs. Among the 22 fairs, held in the district, eight were cattle fairs of which Madurantakam taluk conducted four as weekly fairs. It is also to be noticed that no fairs are held on Tuesdays in the districts[91].

Regulated markets

The common practice in ancient days with a predominantly self-sufficient village economy was for the producer to barter his surplus goods for the goods and services required by him. Gradually, marketing became more and more organized with the improvement in transport services. Commodities began to move from surplus to deficit areas. Merchants developed their trade and gradually many trading centres sprang up, in course of time. These in turn, got urbanised. Marketing functions became specialised. Assembling of commodities in central markets came about and several markets began to flourish in this district. Simultaneously, progressive

science ushered in the machine age. Industries depending on agricultural raw materials like cotton and oil-seeds were started[92]. In Madras, the Commercial Crops Market Act of 1933, provided for the formation of regulated markets in the composite Madras Presidency. By 1940, regulated markets were established in various parts of the presidency.

Chengalpattu-MGR district at present, has 14 regulated markets, located at Kancheepuram, Tiruttani, Tiruvallur, Red hills, Ponneri, Nasarathpet, Uthiramerur, Madurantakam, Tirukalukundram, Sunguvarchatram, Uthkottai, Pallipattu, Acharapakkam and Gummidipoondi. Various commodities are dealt with in these regulated markets and they are paddy, groundnut, gingelly, ragi, chillies, coconut, sugarcane, jaggeri, blackgram, redgram, cotton, horsegram, cumbu, thenai, varagu, onion, castor, tamarind and cashewnut. The main course of trade in the district is through import and export. The main crops exported are paddy and groundnut, while those imported are machines and others ancillaries for the growing industries.

The wholesale trade centres for paddy and groundnut are situated at Kancheepuram, Redhills, Tiruttani and Tiruvallur. The regulated markets for these products are found at Tiruvallur, Tiruttani, Madurantakam, Acharapakkam, Uthiramerur, Uthukottai and Kancheepuram. In this district, Mundis mainly deal with the trade in paddy and are engaged in supplying it to the Madras City. Merchants and labour organisations are functioning at Red hills and at Kancheepuram[93]. Turnover of products transacted in regulated markets is given in *Appendix-34*.

There are 11 regulated markets, 7 co-operative marketing societies, 18 daily shandies, 40 seed cooperative stores and 334 fertiliser depots in the district. Fertiliser depots are functioning in most of the Panchayat Unions except Poonamallee, Sriperumbudur, Puzhal and Thirupporur. The list of regulated markets, cooperative marketing societies, daily shandies, seed cooperative stores and fertiliser depots in various panchayat unions is given in *Appendix-35*.

Weights and measures

Old Units - Land Measure

The Prakrit and early Sanskrit inscriptions mention the extent of land measured by the 'plough' 'nivartana' or 'paltika'. This had been the practice in the Chengalpattu region in the ancient times. Originally, a plough of land had been so much of land as was cultivated by a man with a plough and two bullocks within a given time. Later on, this 'plough of land' appears to have been standardised and used as a unit of land measure. In the Hirahadagalli plates, statements like ' halasatasahasra', one hundred thousand oxploughs (of land), the measurement *viz.*, 'hala' and other terms as units of land are found in inscription of this district. The term 'nivartana' literally means 'a

turning back' and probably in the very early days lands were measured by an individual starting from a particular point and after going round the yield returning to the starting point within certain time, thus marking the exact boundary of the field covered during the course of the round.

As the land covered during the *nirvatana* varied in proportion to the swiftness of the person, walking round, some fixed unit seems to have been invented later on to define a *nivartana*. Though a nivartana usually consists of 20 roads, or 200 cubits or 40,000 *'hastas'* square of land, the Pallava inscriptions do not denote the exact measurement of the area contained in 'nivartana'. The Arthasastra defines a Nivartana as three rajjus[94].

The Chendalur plates mention *Pattiker* as a unit of land measure; it is likely that *Pattika* is a Sanskrit term for the measure. *Padagam* was also a unit of measurement used for cultivable land. A Padagam is equal to 240 Kulis of land[95].

The land units mentioned in our epigraphs are the *kuli, kani, ma,* and *Veli.* Hundred Kulis of land went to make one *ma* and 20 of the latter went to make one veli. The area fixed by each of these units were not permanently or uniformly determined, but varied according to the length of the measuring rod used. The length of the rod (Kol) used, was known from such expressions like the sixteen foot rod (padinaradi-kol) and twelvefoot rod (pannirandadi kol). The latter rod was used for reckoning the lands of the temple both in the Chola and Vijayanagara days. The earliest mention of the 12 foot rod in the temple occurs in an epigraph of Vikrama Chola dated A.D. 1130. Subsequently, it is mentioned as the standard measuring rod of the temple. In A.D. 1261, a new name occurred *viz.,* Nadu-alakkum-kol. This need not be taken as a new type of measuring rod. The phrase simply meant land measuring rod and it is likely that it might refer to the already existing 12 foot-rod. In a 14 century record, the measuring rod was named Gandarangandan-kol. Probably, this was prevalent in northern Tondaimandalam area as attested by an inscription dated 1390, from Tiruppalaivanam and another at Tiruppalakkuli in Chengalpattu region. It is very interesting to see that the rod is carved to its full length with its denominations on the wall of the abhisheka-mandapa of the temple. By the side of the rod, the label Gandaragandan kol is carved. Perhaps this served as the correct standard length to be referred to in case of any doubt or controversy.

Scholars have observed that the absence of a common measuring rod for the empires of Chola and Vijayanagar was the cause of great difficulty felt by the Government in fixing up a uniform rate of assessment on land. Under the British rule, certain common measures like the 'cent', the smallest unit and 'acre' the largest (measuring 100 cents) came into existence.

Land price

There is a few scrappy information regarding the prices of land. In 1073 A.D., during the time of Kulottunga I, a village assembly sold three velis of land to Sri Varadarajaswami Temple at Kancheepuram for 30 kasus which was equivalent to the value of 30 'pon' of gold. Probably, in 1254 A.D., the land price went down considerably for it is reported that seven Velis of land was purchased for only 25 pon[96]. There were numerous measures named differently and each denoted a different standard. In Tiruvottiyur, Chengalpattu-MGR district there was a nali known by the name Karunali and rice was measured by that. Nalvanali is mentioned in an inscription of Tillarru Nandi and Manayanali in an inscription of Nripatunga from the Chengalpattu-MGR district. Measures, it is evident, were also named after persons eminent in the time. Narayanali which is presumably a corruption of Narayananali as is recorded in two inscriptions of Nandivarman and another of Nripatunga. The Perudimanikka Uri was named after Nripatunga's queen[97]. Evidently, *Videlvidugu* Ulakku was the measure sanctioned by the government of the time and so it was a standard measure.

The smallest denomination of the measurement of capacity expressed is a 'pidi' to mean;- a handful ghee, oil, milk and curd are measured by the sevider or soder Alakker, Ulakkar, Uri and nali. The first two items were only measured and not weighed[98]. Later on, the liquid measure that was continuously in usage in the temple during the Chola period was Arumolinangai-nail. It was evidently called after the queen of Vira-Rajendra Choladeva, whose name was Arulmalinangai. The earliest epigraph in which this measure occurs in Sri Varadarajaswami Temple at Kanchi is the 11 year of Kulottunga-III *i.e.* 1081 A.D.

Another frequently occuring liquid measure in the late Chola and the Vijayanagar days, was Kianvallan- nali which was evidently the standard measure used by the temple[99]. In one of Nripatunga's inscriptions, sevidar or soder is expressed both as a weight and as a measure of capacity. It is said that two seviders of Koyam and one 'Sevidu' of ghee were supplied. Sevider is usually taken to be 1/5 of an 'olach' and 360 grains in weight. Olock is 1 1/8 of a measure, Olakku 1/4 of a measure and uri 1/2 of a measure. Padi and nali are found to be synoymous terms to express a measure[100].

In modern times, padi and nali indicate different capacities. Padi (Madras) measure contains 8 olocks while nali is stated to contain 1/4 of a measure of half of a Thanjavur measure. In the Pallava age, rice and paddy were measured by the nali, marakkal, kuruni, padabbu, kadi and kalam. The standard measure por-kal was used for measuring paddy in Mamallapuram in the eighth century and it figures in a record of Nandivikramavarman[101].

During the time of British, the following weights and measures were used in the Chengalpattu region.

Weights

3	tolahs	1 palam
8	palam (or 24 tolahs)	1 entcha seer
40	palam (or 120 tolahs)	1 viss (3.0857 avoir)
50	palam (or 150 tolahs)	1 took
5	viss (or 600 tolahs)	1 toolaum
8	viss (or 960 tolahs)	1 maund (24.6857 lb avoir).
20	manungs (maunds)	1 candy or barrum)

There was also a pucka seer in use of 72 tolahs.

Land Measures

The measure of land in local use was formerly the Cawny which was sub-divided thus:

25 adees or country feet = 1 kole (24 English feet)

1 Square role = 2 Coozhy = 576 square feet

100 Coozhies = 1 Cawny = 57,600 Square feet = 1.322314 acres

Aadie = 10.2857 English inches

The cawny was the standard land measure of the country formerly under the rule of the Nawabs of the Carnatic. Mr.Ellis in his paper dated 1814 on mirassy right, spoke of an ancient Hindu Cawny of 1,72,000 square feet, and of another known as Conairy Royer's Cawny where the kole was 36 feet. But, he had not stated them either as English feet or as 100 square roles that made the Cawny.

The munny or ground or 24 part of a Cawny was also used in Chengalpattu for sites of buildings. The Cawny was also sub-divided in the vernacular accounts into annas or 16 of 3600 square feet each and these again into piece of 12ths of 300 square feet each.

According to Buchanan[102] in the jaghur (the usual name for the Chengalpattu district having been a jaghur from the Nawab of Arcot in 1763) the 'adee' or foot was 10.4562 inches.

Thus:-

24 adees square = 1 Coozhy

100 Corozhies = 1 Cawny (43,778 square feet)

Before the lands of the district were re-measured in 1766 there was a 'mamool' or 'customary' cawny, which in many of the agraharams or Brahmin villages was generally 3/4 of the royajee or standard Cawny, while in the munnavaid or shoodia villages it was 20 per cent over the standard. Later, the acre superseded these measures used in the village registers and pattas of the Government.

Grain measures

In the year 1800, it was reported that the 'cullum' was 12 Madras mercauls (the mercaul brought most probably the 'customary' one of 832 cubic inches struck). In the return to a circular of 1921, it was again reported that the weights and measures were the same as those in Madras, having been introduced by Mr.Coleman, - the judge in 1810 A.D. But in 1850, it was reported that the Government standard measure (100 cubic inches) was in use. This appears to have been an error, for when trials were made in 1852 it was found that the 'measure' or puddy was on an average 107 cubic inches, but being of narrower diameter than the Madras 'Customary' puddy of 104 cubic inches it held about the same when heaped, or 120 to 128 rupees' weight.

The old table is,

124	tolahs weight or rice	=	1 puddy slightly heaped
8	puddies		mercauls (heaped)
12	mercauls		1 cullum
400	mercauls or 33 1/3 cullums	=	1 grace

The normal contents of the puddy or measure in use varied from 120 tolahs (about 107 cubic inches) in the Saidapet, Tiruvallur and Ponneri taluks to 140 taluks (118 cubic inches) in the Chengalpattu and 150 tolahs (128 cubic inches) in the Madurantakam and Kancheepuram taluks. Its diameter was 4.2 inches throughout, except in the Ponneri taluk, where it was 5.5 inches.

The 'pucka seer' again was formerly used as a grain measure and is said to be so when heaped. This would agree with the 'Madras measure' when only just topped and running over but not heaped. The old royajee mercaul and cullum called after the celebrated diwan and renter the Nawab Wallajah, were respectively 1/3 of the mercaul and cullum of 1800.

Liquid Measures

The 'paddy' was used in grain measure with its submultiples of eighths or ollocks. The same measures were used for milk, oil and ghee but the last two were often sold by weight. The weights and measures introduced by British continued till metric system came into being in October 1958[103].

Government of India, having decided to introduce Metric System of Weights and Measures implemented the Standards of Weights and Measures Act 1956. Metric System was introduced in the first instance in the four districts *viz.*, Madras, Chengalpattu, North Arcot and South Arcot with effect from 1 October 1958 with a traditional period of two years, during which period both the old and the new weights were to continue side by side. The use of metric weights was made compulsory in the above four districts with effect from 1 October 1960. Metric capacity measures were also introduced

in the above four districts with effect from 1 April 1961. With a transitional period of one year for making them compulsory, these capacity measures became compulsory from 1 April 1962. These became compulsory for the rest of the districts of Tamil Nadu by Ist April 1963 in two more stages *i.e.*, by 1 October 1962 and 1 April 1963. This system was introduced in a phased manner to avoid bottlenecks to the consumer and the trader. By 1965, the change over was complete. The metric system is unique, in that, the multiples and the sub multiples bear a decimal relation taken in order. The calculation process is simplified and many of the difficulties experienced in day to day transactions are overcome. Thus, it has had a very favourable impact on the commonman. Certain loopholes instigating the traders to dupe the common man, when the old obscure units were prevalant, have been permanently plugged. The long standing difficulties faced by the wholesalers in quoting prices in markets inside and outside the State have been eliminated. Inter State trade is made smooth. The metric system of weights and measures is one of the important reforms heralded in the country, after Independence. The State Government have set up the requisite institution as infrastructure for periodical verification and certification of weights and measures used in commercial transactions, so that the consumer is assured of accuracy. The Controller of Weights and Measures functions as the nodel point for all the activities relating the administration of weights and measures[104].

APPENDIX -1

List of Money lenders and pawn brokers in the district

Serial no.	*Name of the taluk*	*No. of Money Lenders.*	*No. of Pawn Brokers*
(1)	Chengalpattu	N.A.	N.A.
(2)	Kancheepuram	N.A.	N.A.
(3)	Maduranthakam	5	190
(4)	Ponneri	14	230
(5)	Saidapet	N.A.	N.A.
(6)	Sriperumbudur	4	449
(7)	Tiruttani	27	91
(8)	Tiruvallur	N.A.	244
(9)	Uthiramerur	2	68
(10)	Gummidipoondi	9	63
(11)	Cheyyur	N.A.	N.A.
(12)	Uthukottai	6	116
(13)	Palliput	4	20

* N.A.— Not available

APPENDIX - 2

The performance of Banks in implementing Annual Action Plans from 1984, 1985 and 1986 are given

(Rs. in crores)

Sector		*1984*	*1985*	*1986*
Crop loan	T	24.56	22.37	23.05
	A	16.67	18.93	27.09
Term loan	T	4.16	4.43	5.28
	A	6.51	6.39	8.70
Allied to Agriculture	T	4.71	5.33	5.75
	A	4.96	5.55	5.07
Rural & Cottage Industries	T	0.84	1.25	1.29
	A	0.55	1.43	1.61
Small Scale Industries	T	13.28	14.56	16.28
	A	13.35	15.30	16.99
Services	T	5.12	5.93	8.12
	A	11.05	11.05	14.87

T - Target
A - Achievement

District Credit Plan 1988-90 and Annual Action Plan, p.10, 1988
Chengalpattu District.

APPENDIX-3

Blockwise details of Commercial Bank branches operating in this district
(as at the end of March 1990)

1. Acharapakkam Block	
1. Indian Overseas Bank	1. Acharapakkam 2. L.Endathur
2. Indian Bank	1. Ramapuram
3. South Indian Bank Limited	1. Elappakkam 2. Orathi
4. Central Bank of India	1. Kadamalaipudur
2. Chithamur Block	
1. Central Bank of India	1. Chithamur 2. Sothupakkam
2. Indian Overseas Bank	1. Churampet
3. Indian Bank	1 - Edaikazhinadu
4. Canara Bank	1. Kayapakkam
3. Ellapuram Block	
1. Bank of Baroda	1. Periya Palayam
2. Indian Bank	1. Kannigaiper 2. Palavakkam
3. Canara Bank	1. Vengal
4. Indian Overseas Bank	1. Uthukottai
5. Bank of India	1. Poochiathipattu
4. Gummidipoondi Block	
1. Dena Bank	1. Gummidipoondi
2. Indian Overseas Bank	1. Kavaraipettai 2. Padirivedu
3. Bank of India	1. Arambakkam
4. Canara Bank	1. Madarpakkam
5. Indian Bank	1 - Gummidipoondi
6. Syndicate Bank	1. Thorapallam
5. Kadambatore Block	
1. Indian Bank	1. Kadambathur 2. Pudupet 3. Mappedu
2. Indian Overseas Bank	1. Manavalanagar
3. UCO Bank	1. Perambakkam
6. Kancheepuram Block	
1. State Bank of India	1. Kancheepuram
2. Bank of India	1. Kancheepuram
3. Canara Bank	1. Kancheepuram
4. Central Bank of India	1. Kancheepuram

5.	Dena Bank	1. Kancheepruram
6.	Indian Bank	1. Kancheepuram 2. Tiruppukuzhi 3. Salai Street 4. Magaral.
7.	Indian Overseas Bank	1. Kancheepuram 2. Sevilimedu
8.	Punjab National Bank	1. Kancheepuram
9.	Syndicate Bank	1. Kancheepuram
10.	Union Bank of India	1. Kancheepuram
11.	UCO Bank	1. Kancheepuram
12.	Bank of Madura Limited	1. Kancheepuram
13.	Indian Bank (BOT)	1. Kancheepuram
14.	Karur Vysya Bank Limited	1. Kancheepuram
15.	Lakshmi Vilas Bank Limited	1. Kancheepuram
16.	Nedungadi Bank Limited	1. Kancheepuram
17.	South Indian Bank Limited	1. Kancheepuram 2. Damal
18.	Vysya Bank Limited	1. Kancheepuram
19.	Indian Overseas Bank (BOTN)	1. Kancheepuram
20.	City Union Bank Limited	1. Kancheepuram
21.	Tamil Nadu Mercantile Bank Limited	1. Kancheepuram
7.	*Kattankulathur Block*	
1.	State Bank of India	1. Chengalpattu
2.	Bank of Baroda	1. Chengalpattu
3.	Central Bank of India	1. Maraimalainagar
4.	Indian Bank	1 Attur 2. Chengalpattu 3. Maraimalainagar 4. Ozhalur 5. Guduvanchery 6. Singaperumal Koil
5.	Indian Overseas Bank	1. Chengalpattu 2. Maraimalainagar
6.	Indian Bank (BOT)	1. Chengalpattu
8.	*Kunrathur Block*	
1.	State bank of India	1. Somangalam
2.	Bank of Baroda	1. Mangadu 2. Kovoor
3.	Indian Overseas Bank	1. Kunrathur 2. Manimangalam
4.	South Indian Bank Limited	1. Padappai
5.	Union Bank of India	1. Vadakkupattu

9. Lathur Block	
1. State Bank of India	1. Pavinjur 2. Anaikattu
2. Canara Bank	1. Cheyyur 2. Kodur
3. Indian Bank	1. Moovathur
10. Madurantakam Block	
1. State Bank of India	1. Madurantagam 2. Karunkuzhi
2. Indian Bank	1. Madurantagam 2. Mamandur 3. Zamin Endathur
3. Indian Overseas bank	1. Madurantagam
4. Canara bank	1. Padalam 2. Vaiyavoor
5. South Indian Bank Limited	1. Nelvey
11. Minjur Block	
1. State Bank of India	1. Ponneri 2. Edayanchavadi
2. Indian Bank	1. Medur 2. Pulicat 3. Manali New town 4. Kattur
3. Indian Overseas bank	1. Ponneri
4. Union Bank of India	1. Kathivakkam
5. Indian bank (BOT)	1. Minjur
6. Central Bank of India	1. Ennore
12. Pallipet Block	
1. State Bank of India	1. Athimanjeripet
2. Indian Bank	1. Pallipat 2. Podathurpet
13. Poonamalle Block	
1. State Bank of India	1. Avadi
2. Canara Bank	1. Poonamalle
3. Indian Bank	1. Poonamalle 2. Pattabiram 3. Thirumazhigai 4. Thiruninravur 5. Avadi
4. Indian Over seas Bank	1. Nazerathpet 2. Avadi
5. Bank of Madura Limited	1. Avadi
6. Karur Vysya Bank Limited	1. Thiruverkadu
7. Vijaya bank	1. Avadi
8. Indian Bank	1. Avadi

14. Poondi Block		
	1. Indian Bank	1. Poondi
		2. Thirupachur
		3. Meyyur
	2. Indian Overseas Bank	1. Pennalurpet
	3. Bank of India	1. Pondavakkam
	4. central Bank of India	1. Pattaraiperumbudur
15. Puzhal Block		
	1. State Bank of India	1. Tiruvottiyur
		2. MRI. Manali
		3. Madras Fertilizers
	2. Canara Bank	1. Tiruvottiyur
	3. Indian Bank	1. Manali
		2. Red Hills
		3. Tiruvottiyur
	4. Union Bank of India	1. Madhavaram
	5. Central Bank of India	1. Tiruvottiyur
	6. Indian Bank(BOT)	1. Tiruvottiyur
	7. Indian Overseas Bank	1. Tiruvottiyur
16. R.K.Pet Block		
	1. Indian Bank	1. Aswaravanthipuram
		2. Vanganur
		3. Ammayarkuppam
	2. Indian Overseas Bank	1. Vediyankadu
17. Sholavaram Block		
	1. Indian Overseas Bank	1. Arni
	2. Canara Bank	1. Karanodai
		2. Perungavur
	3. State Bank of India	1. Janapathchatram
	4. Bank of Madura Ltd.	1. Padiyanallur
	5. Indian Bank	1. Andarkuppam
18. Sriperumpudur Block		
	1. State Bank of India	1. Sriperumbudur
	2. Canara Bank	1. Maduramangalam
	3. Union Bank of India	1. Sunguvarchatram
	4. India Bank	1. Sriperumbudur
		2. Valarpuram
	5. South Indian Bank Ltd.	1. Mathur
19. St.Thomas Mount Block		
	1. State Bank of India	1. Air Cargo Complex
		2. AFS Tambaram
		3. Alandur
		4. Nandambakkam

	5. Nanganallur 6. Pallavaram 7. Guindy 8. Tambaram 9. Perungudi
2. State Bank of Mysore	1. St.Thomas Mount
3. Bank of Baroda	1. St.Thomas Mount
4. Canara Bank	1. Nanganallur 2. Pallavaram
5. Central Bank of India	1. Alandur 2. Pallavaram 3. Nandambakkam
6. Indian Bank	1. Anakaputhur 2. Chrompet 3. Guindy 4. Pallavaram 5. Tambaram 6. Hasthinapuram 7. Sholinganallur 8. MEPZ
7. Indian Overseas Bank	1. Meenambakkam 2. Adambakkam 3. Pammal 4. Perungulathur 5. Tambaram 6. MMC Campus
8. UCO Bank	1. Selaiyur 2. Narayanapuram
9. Bank of Madura Ltd.	1. Tambaram 2. Selaiyur
10. Indian Bank (BOT)	1. Madipakkam 2. Nanganallur 3. Tambaram
11. Nedungadi Bank Ltd.	1. Alandur
12. Syndicate Bank	2. Nanganallur
13. Karur Vysya Bank Ltd.	1. Alandur 2. Tambaram 3. Chrompet
20. T.K.Kunram Block	
1. State Bank of India	1. Kalpakkam 2. T.K.Kunram
2. Canara Bank	1. T.N. Kunram 2. Kalpakkam 3. Vayalur
3. Indian Bank	1. P.V. Kalathur
4. Indian Overseas bank	1. Mahabalipuram 2. Nerambur

21. Tiruporur Block		
	1. Central Bank of India	1. Kelambakkam
	2. Indian Bank	1. Tiruporur 2. Alathur P.C. 3. Kovalam 4. Sembakkam
	3. Indian Overseas Bank	1. Manampathy 2. Nellikuppam
22. Tiruttani Block		
	1. State Bank of India	1. Tiruttani
	2. Canara Bank	1. Thadur
	3. Syndicate bank	1. Tiruttani
	4. Indian Bank	1. Maddur 2. Tiruttani
23. Tiruvelangadu Block		
	1. Indian Bank	1. Tiruvelangadu
	2. Indian Overseas Bank	1. Kanakammachatram 2. N.N.Kandigal 3. Ponnimangadu
24. Tiruvallur Block		
	1. State Bank of India	1. Tiruvallur 2. Tiruvallur ADB
	2. Syndicate Bank	1. Tiruvallur
	3. UCO Bank	1. Valliyur
	4. City Union Bank Ltd.	1. Veppampattu
25. Uthiramerur Block		
	1. Canara Bank	1. Uthiramerur 2. Marudham
	2. Indian Bank	1. Neyyadivakkam 2. Salavakkam 3. Hanampathy 4. Arumpuliyur
	3. Indian Overseas Bank	1. Uthiramerur
	4. South Indian Bank Ltd.	1. Nelvoy
	5. Bank of India	1. Kammalampoondi
26. Villivakkam Block		
	1. State Bank of India	1. Ambattur 2. Ambattur I.E. 3. SIDCO Ind.Est. 4. Maduravoyal 5. AFS Avadi 6. HVF Avadi

2. Andhra Bank	1. Valasarvakkam
3. Bank of Baroda	1. Ambattur
4. Bank of India	1. Ambattur
5. Canara bank	1. Ambattur 2. Nerkunram
6. Indian Bank	1. Padi 2. Porur 3. Ambattur
7. Indian Overseas Bank	1. Ambattur
8. UCO Bank	1. Korattur
9. Indian Bank (BOT)	2. Ambattur
10. Central Bank of India	1. Ambattur
11. Vysya Bank Ltd.	1. Villivakkam
27. Walajabad Block	
1. State Bank of India	1. Ayyampettai
2. Canara bank	1. Parandur
3. Indian Bank	1. Nammarvarpalayam 2. Walajabad
4. South Indian bank Ltd.	1. Arumugampet 2. Aayampettai
5. Karur Vysya bank Ltd.	1. Ullavur

APPENDIX - 4

Number of branches of each bank and their performances

(Rs. in lakhs)

Sl. no.	Name of the Bank	No.of Branches	Deposits	Advances	Credit Deposit (per cent)	Priority Amount	Sector Advance (per cent)
1.	2.	3.	4.	5.	6.	7.	8.
1.	State Bank of India	36	1580287	2087085	132.07	1403547	67.25
2.	State Bank of Mysore	1	42161	7386	17.52	2652	35.90
3.	Andhra Bank	1	47357	6564	13.82	3083	47.10
4.	Bank of Baroda	6	220652	168648	76.43	84742	50.24
5.	Bank of India	7	56048	96654	172.45	57312	59.30
6.	Canara Bank	25	615030	378411	1.52	165385	43.70
7.	Central Bank of India	13	180931	104917	57.98	74163	70.68
8.	Dena Bank	2	6021	5164	85.76	3649	78.66
9.	Indian Bank	80	1836527	1902743	103.60	1274412	66.98

APPENDIX - 4 *(Cont.)*

Agriculture		Weaker Sections		DRI	
Amount	per cent	Amount	per cent	Amount	per cent
9.	10.	11.	12.	13.	14.
467453	22.39	387362	18.55	30735	1.47
4	0.03	343	4.64	22	0.3
-	-	3883	47.09	75	1.14
29998	17.79	18047	10.70	186	0.11
24894	25.76	4272	4.41	357	0.36
144783	38.26	102328	27.04	5201	1.37
33843	32.25	5617	5.35	925	0.88
491	9.56	2669	57.68	152	2.94
561666	29.52	482795	25.87	21760	1.14

APPENDIX - 4 *(Cont.)*

1.	2.	3.	4.	5.	6.	7.	8.
10.	Indian Overseas Bank	37	853200	640300	75.04	389100	66.76
11.	Punjab National Bank	1	16255	13200	81.20	5831	44.17
12.	Syndicate Bank	5	149030	98056	65.80	40456	41.25
13.	United Commercial Bank	6	92796	92498	99.67	81844	88.48
14.	United Bank of India	5	75400	49752	65.98	48810	82.02
15.	Vijaya bank	1	188133	38696	35.78	4262	11.01
16.	Bank of Madura	5	13332	9731	72.98	3473	35.69
17.	Nedungadu Bank	2	12324	5568	45.18	1161	20.85
18.	South Indian Bank	9	39918	43860	109.87	16758	38.20
19.	Karur Vysya bank	6	92714	24282	26.19	9002	37.07

APPENDIX - 4 *(Cont.)*

9.	*10.*	*11.*	*12.*	*13.*	*14.*
207703	32.43	215000	33.58	39990	0.62
2952	22.36	2231	16.90	20	0.15
21200	21.62	18765	19.13	748	0.76
58216	54.28	37453	40.49	1585	1.71
19701	39.00	18186	36.55	1719	3.45
300	9.77	763	1.97	47	0.12
862	8.85	143	1.47	-	-
14	0.25	81	10.83	6	0.1
15964	36.40	4753	-	347	0.79
3247	13.37	-	12.62	96	0.39

APPENDIX - 4 *(Cont.)*

1.	2.	3.	4.	5.	6.	7.	8.
20.	Lakshmi Vilas Bank	1	10797	3762	34.84	532	14.14
21.	Vysya Bank	2	49018	35487	72.40	4047	11.40
22.	City Union Bank	2	13707	11388	82.49	4114	36.38
23.	Tamil Nadu Mercantile Bank	1	7165	9285	129.58	2267	24.41
	Total	254	6118805	5833339	95.33	3672602	62.95

APPENDIX - 4 *(Cont.)*

9.	10.	11.	12.	13.	14.
100	2.66	475	0.26	5	0.43
47	0.11	94	6.12	69	0.19
886	7.78	692	-	19	0.16
-	-	-	-	119	1.28
1586321	27.19	1305152	22.37	68194	1.17

Annual Credit Plan 1991-92 Chengalpattu-MGR District Indian Bank (Lead Bank), p.50, (Statistical data as in 1990-91).

APPENDIX-5

Information on Commercial Banks in Chengalpattu-MGR District from 1980 to 1990

(Rs. in crore)

Sl. no.	Year	No.of Branches	Total Deposits	Total Advances	Credit Deposit Ratio	Advances to Priority Sector: No. of Accounts	Advances to Priority Sector: Advances Amount
1.	2.	3.	4.	5.	6.	7.	8.
1.	1980	171	103.10	98.10	95.2	131150	57.78
2.	1981	180	123.63	116.70	94.5	149759	72.32
3.	1982	190	144.63	131.72	91.0	157836	79.69
4.	1983	199	175.58	150.77	74.43	184837	99.90
5.	1984	218	197.22	193.37	94.92	207434	126.48
6.	1985	218	236.57	226.28	95.65	231901	136.63
7.	1986	219	299.81	283.42	94.53	263176	173.94
8.	1987	220	319.97	331.44	103.58	276374	189.48
9.	1988	245	417.40	402.11	96.34	300709	243.15
9.	1989	254	478.63	456.59	95.40	328858	271.55
11.	1990	254	516.41	506.49	98.09	338720	296.61

APPENDIX-6

The progress of the Big Kancheepuram Co-operative Town Bank Kancheepuram in various spheres from 1975-76 to 1991-92

Year	No.of members	Share capital	Total deposits	Loans issued	Loans outstanding	Reserve fund	Net profit	Dividend
1.	2.	3.	4.	5.	6.	7.	8.	9.
1975-76	16458	13.01	148.61	115.95	117.07	2.83	1.60	9 per cent
1976-77	18396	13.92	173.30	110.31	110.32	3.23	2.50	9 per cent
1977-78	20090	15.01	216.92	125.75	141.84	3.85	3.34	12 per cent
1978-79	21976	17.36	264.70	208.76	175.08	4.70	4.57	12 per cent
1979-80	25230	20.17	325.00	300.21	247.27	5.95	5.17	12 per cent
1980-81	28258	23.80	372.77	375.42	303.66	7.58	5.86	12 per cent
1981-82	29783	27.03	449.61	404.85	364.64	7.58	3.42	12 per cent
1982-83	31870	30.15	489.36	431.28	419.58	10.46	4.41	12 per cent
1983-84	33634	30.89	614.40	432.76	442.02	11.00	3.49	9 per cent
1984-85	35536	31.24	706.97	407.45	478.60	12.97	3.08	9 per cent
1985-86	39011	34.10	842.06	601.72	540.06	13.74	6.38	12 per cent
1986-87	41738	38.35	977.24	781.67	741.56	15.22	7.46	12 per cent
1987-88	42593	40.55	1068.43	647.38	800.34	15.22	6.36	12 per cent
1988-89	45690	43.73	1153.71	651.45	860.15	17.98	2.30	6 per cent
1989-90	47210	47.16	1277.58	748.88	933.70	17.90	3.95	6 per cent
1990-91	49190	51.29	1401.88	894.34	1027.88	19.22	Net yet	declared
1991-92	50274	51.93	1436.01	649.50	1048.35	19.22	"	

(Period ended 31 March 1992). The bank has been classified as 'A'

APPENDIX - 7

Details of loans issued by Kancheepuram Central Co-operative Bank Limited, Kancheepuram, from 1976-77 to 1991-92

Sl. no.	*Year*	*Loans issued (Short term loan including cash credit and other types of loans)*	*Medium Term Loan*	*Long Term Loan*
			(Rupees in lakhs)	
1.	1976-77	2573.57	121.92	0.16
2.	1977-78	2575.90	111.87	0.52
3.	1978-79	2610.90	130.73	0.50
4.	1979-80	2687.74	117.13	1.36
5.	1980-81	3908.65	134.80	1.52
6.	1981-82	5761.35	151.12	2.06
7.	1982-83	6027.41	185.22	1.01
8.	1983-84	7769.80	257.88	7.51
9.	1984-85	8569.11	281.12	8.87
10.	1985-86	11158.42	353.31	6.60
11.	1986-87	13489.58	487.64	3.76
12.	1987-88	16910.04	632.05	49.49
13.	1988-89	17529.43	688.69	58.76
14.	1989-90	18149.62	643.71	43.91
15.	1990-91	22197.85	859.43	12.72
16.	1991-92	23927.90	722.73	27.69

Report of the Special Officer, Kancheepuram, Central Co-operative Bank Limited, dated 15 October 1991.

APPENDIX-8

Achievement of the Chengalpattu Co-operative Urban Bank, Chengalpattu

S.no.	Year	Classification of Members 'A'	'B'	Share capital	Deposit	Loan arrears	Profit
						(Rupees in lakhs)	
1.	1980-81	2367	17021	2.65	52.9	57.95	0.66
2.	1981-82	2481	17820	3.69	60.38	59.91	1.49
3.	1982-83	2529	18736	2.81	70.29	62.36	1.98
4.	1983-84	3213	19076	3.04	76.85	65.10	1.51
5.	1984-85	3615	19571	3.59	80.51	66.08	2.05
6.	1985-86	3854	20135	4.80	95.05	71.18	1.63
7.	1986-87	4139	20607	5.85	116.56	86.00	2.18
8.	1987-88	4484	21198	6.11	135.67	117.49	3.61
9.	1988-89	4636	21574	6.51	144.88	122.91	2.86
10.	1989-90	5408	21758	7.29	154.86	125.17	5.37
11.	1990-91	5803	22019	8.17	173.30	149.24	5.61
12.	1991-92	6369	22216	9.27	191.20	167.29	5.05

APPENDIX-9

Loans advanced to Big farmers and small farmers under different schemes from 1981-82 to 1991-92

Year	Loans under normal schemes.				I.R.D.P. Massive Schemes						Total					
	No		Amount													
	B.F.	S.F.	B.F.	S.F.	No.	Amt.	No.	Amt.	No.	Amt.	B.F.	S.F.	B.F.	S.F.	No.	Amt.
1981-82	11	--	2.14	--	--	--	--	--	--	--	2	--	0.14	--	13	2.28
1982-83	36	4	4.00	0.25	--	--	--	--	--	--	--	22	--	1.07	62	5.32
1983-84	17	4	3.35	2.00	87	2.55	--	--	--	--	12	4	0.77	0.40	124	0.07
1984-85	11	7	3.95	2.00	40	1.50	141	11	--	--	--	11	--	0.78	83	9.34
1985-86	6	9	2.95	2.63	44	1.87	70	92	--	--	1	14	0.04	1.00	81	9.41
1986-87	--	--	0.52	--	29	1.83	141	33	--	--	--	42	--	3.34	85	7.02
1987-88	17	5	1.30	0.33	59	2.30	36	3.19	--	--	34	43	4.31	3.45	194	14.88
1988-89	--	--	0.09	--	42	2.13	4	1.47	--	--	10	66	2.87	4.17	122	10.73
1989-90	1	--	0.15	--	3	0.16	7	0.83	--	--	3	17	4.69	0.91	31	6.64
1990-91	12	3	1.14	0.29	4	0.21	2	0.46	2	1.00	--	8	5.89	0.96	31	9.95
1991-92	5	6	0.76	0.28	--	--	--	0.35	13	6.40	5	20	4.67	2.72	49	15.18

Report of the Chengalpattu Co-operative Primary Land Development Bank Limited, dated 8 June 1988 and 4 December 1992

B.F. - Big Farmers

S.F. - Small Farmers

APPENDIX - 10

Advance of loans under different schemes by Ellapuram Co-operative Primary Land Development Bank, Uthukottai from 1981-82 to 1991-92

(Rs. in lakh)

Year	Loans under Normal				Loans under I.R.D.P.				Loans under Massive Programme				Loans under Scheme		Total	
	No.		Amount		No.		Amount		No.		Amount		No.	Amount		
	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	No.	Amount
1981-82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1982-83	2	—	0.93	—	—	—	—	—	—	—	11		0.07	—	13	1.00
1983-84	9	—	3.04	—	—	35	—	0.35	5	0.31	4	—	—	0.10	53	3.94
1984-85	4	—	0.32	—	—	23	—	0.73	15	0.89	1	2	0.96	0.67	45	3.57
1985-86	6	—	3.53	—	—	29	—	0.95	10	1.47	12	2	0.37	0.08	59	6.40
1986-87	1	—	1.02	—	—	38	—	1.04	14	0.94	4	12	0.52	0.58	69	4.10
1987-88	9	3	0.61	0.48	4	0.12	15	1.19	22	31	3.60	2.32	—	—	34	8.32
1988-89	3	—	0.73	—	6	0.25	6	0.64	15	14	3.82	1.31	—	—	44	6.75
1989-90	9	—	0.82	—	—	—	—	0.01	3	6	2.22	0.34	—	—	18	3.39
1990-91	3	13	3.67	0.26	—	—	—	—	13	2	1.56	0.88	6	1.50	37	7.87
1991-92	6	—	4.74	—	—	—	—	—	11	6	5.56	0.88	—	0.25	23	11.43

Report from the Managing Director, Tamil Nadu Co-operative State Land Development Bank Limited, dated 4 December 1992

B.F. - Big Farmers

S.F. - Small Farmers

APPENDIX - 11

Loans advanced under various scheme by the Gummidipoondi Co-operative Primary Land Development Bank, Gummidipoondi from 1981-82 to 1991-92

(Rs. in lakh)

Year	*Loans under Normal Schemes*				*Loans under IRDP*				*Loans under Massive Schemes*		*Total*	
	No.		*Amount (in lakhs)*		*No.*		*Amount (in lakhs)*		*No.*	*Amount (in lakhs)*	*No.*	*Amount (in lakhs)*
	B.F.	*S.F.*	*B.F.*	*S.F.*	*B.F.*	*S.F.*	*B.F.*	*S.F.*	*B.F.*	*S.F.*		
1981-82	7	18	2.72	1.48							25	4.20
1982-83	15	23	3.08	2.11	30		0.50				68	5.69
1983-84	8	5	3.80	1.11	26		0.47		25	0.82	64	6.20
1984-85	5	1	0.44	0.04	32		0.63		18	1.34	56	2.45
1985-86	24	1	7.05	0.05	4		0.06		17	0.71	46	7.87
1986-87	3	-	0.59	-	29		1.01		10	0.94	42	2.54

Year	Normal		IRDP		Massive		Schemes		NFS		No.	Total
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount		Amount
1987-88	15	1.40	30	1.30	30	1.59	13.4	17.68	-	-	209	21.80
1988-89	8	1.22	64	2.28	33	1.89	51	9.92	-	-	156	15.31
1989-90	1	1.47	10	0.40	13	0.82	31	9.41	-	-	55	12.10
1990-91	19	1.47	2	0.09	6	0.44	15	10.63	1	0.17	43	12.80
1991-92	7	7.77	—	—	1	0.25	17	9.07	2	0.35	27	17.44

NFS - Non Farm Sector

B.F. - Big Farmers

APPENDIX - 12

Advance of loans under different schemes by Kadambathur Co-operative Primary Land Development Bank, Kadmbathur from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				Loans under IRDP		Loans under Massive Programme		Loans under Schemes				NFS		Total	
	No.		Amount		No.	Amount	No.	Amount	No.		Amount		No.	Amount	No.	Amount
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.				
1981-82	25	20	3.40	2.19											45	5.59
1982-83	25	30	4.50	3.46											55	7.96
1983-84	20	21	3.90	2.36											41	6.26
1984-85	5	2	2.19	0.30	21	0.77			4	—	0.27	—			32	5.15
1985-86	6	10	4.03	1.20	5	0.15	15	0.82	4	—	0.22	—			40	6.42
1986-87	7	1	6.99	0.04	9	0.42	16	1.03	21	—	1.29	—			54	9.77
1987-88	2	—	0.16	—	10	0.48	32	1.95	51	—	7.90	—			95	10.49
1988-89	4	—	4.21	—	8	0.26	7	0.77	67	10	9.59	1.75			96	16.58
1989-90	4	—	1.65	—	1	0.06	3	0.25	5	—	5.83	—			13	7.79
1990-91	5	—	1.95	—	—	—	—	0.02	14	3	11.96	0.17	4	1.03	26	15.13
1991-92	10	—	3.48	—	—	—	8	0.22	23	8	13.90	0.41	6	2.24	55	20.25

APPENDIX - 13

Advance of loans under different schemes by the Kancheepuram Co-operative Land Development Bank, Kancheepuram from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				I.R.D.P.		Massive Programme		Schemes						Total	
	No.		Amount		No.	Amount	No.	Amount	No.		Amount				No.	Amount
	S.F.	O.F.	S.F.	O.F.					S.F.	O.F.	S.F.	O.F.	NFS			
1981-82	—	5	—	1.61	—	0.02									15	1.63
1982-83	4	13	0.25	2.65	62	0.90									79	3.80
1983-84	10	11	0.61	2.18	87	1.82	14	0.96	18	—	0.44	—			1.40	6.01
1984-85	4	7	0.25	2.72	55	1.93	26	2.35							92	7.25
1985-86	14	8	0.79	2.50	85	1.88	23	1.56	5	7	0.40	0.37			142	7.50
1986-87	2	1	0.21	0.15	40	2.13	30	2.00	11	3	2.08	0.23			87	6.80
1987-88	5	18	0.35	1.38	15	0.60	88	6.65	2	84	0.06	7.44			212	16.48
1988-89	-	3	-	1.41	33	1.09	11	3.02	79	44	3.51	5.58			170	14.61
1989-90	-	2	-	0.17	6	0.21	6	0.62	29	18	1.13	4.35			61	6.48
1990-91	15	55	1.19	4.76	49	1.39	10	0.84	5	12	1.13	5.556	146	1.75	152	16.61
1991-92	8	29	1.13	4.52	3	0.93	5	0.91	29	12	1.49	9.228	86	2.92	94	21.12

Report of the Special Officer, The Kancheepuram Co-operative Land Development Bank Limited, Kancheepuram, dated 4 December 1992.

S.F. - Small Farmers

O.F. - Other Farmers

NFS - Normal Formal Sector

APPENDIX - 14

Advance of loans under different schemes by the Madurantakam Co-operative Land Development Bank, Madurantakam from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				I.R.D.P.		Massive Programme		Schemes.					Total	
	No.		Amount		No.	Amount	No.	Amount	No.		Amount			No.	Amount
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F	B.F.	S.F			
1981-82	13	2	3.17	0.12	11	0.30	—	0.30	10	—	0.67	—		36	4.26
1982-83	47	14	2.64	0.48	292	6.61	—	—	46	10	2.30	0.53		409	12.56
1983-84	21	8	1.16	0.80	148	3.16	29	1.44	121	32	5.30	2.55		357	14.41
1984-85	14	5	2.07	0.52	150	4.03	42	4.59	33	—	2.35	—		244	13.56
1985-86	39	14	8.17	4.27	26	1.49	44	4.49	44	—	3.87	1.48		167	23.77
1986-87	5	—	0.99	—	60	2.06	67	6.70	69	—	9.00	—		221	18.75
1987-88	21	5	3.05	0.76	65	2.82	134	11.20	215	—	21.08	—		440	38.91
1988-89	11	—	1.76	—	55	2.50	28	7.82	125	13	11.00	1.02		232	24.10
1989-90	4	—	0.45	—	16	0.73	10	1.11	47	8	5.93	0.89		85	9.11
													NFS		
1990-91	41	36	3.71	0.93	15	0.49	8	0.75	14	25	8.27	3.001	0.20	139	17.35
1991-92	16	6	3.21	0.81	5	0.25	9	1.34	43	63	29.67	4.493	1.19	142	40.96

Report from the Special Officer, Maduranthagam Co-operative Land Development Bank Limited, dated 25 July 1988 and 4 December 1992.

APPENDIX - 15

Advance of loans under different schemes by the Pallipet Co-operative Land Development Bank, from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				Loans under IRDP		Loans under Massive Programme		Loans under Scheme.				NFS		Total			
	No.		Amount		No.	Amount	No.	Amount	No.		Amount		No.	Amount	No.		Amount	
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.			B.F.	S.F.	B.F.	S.F.
1981-82	-	2	-	0.15	—	—	—	—	—	—	—	—			—	2	—	0.15
1982-83	28	4	2.94	0.10	—	—	—	—	—	—	—	—			28	4	2.94	0.10
1983-84	9	9	1.10	0.74	43	0.97	8	0.47	—	30	—	0.96			9	90	1.10	3.14
1984-85	3	11	1.13	0.74	73	1.84	13	0.97	—	—	—	—			3	97	1.13	3.55
1985-86	5	4	5.20	0.40	106	2.72	12	1.56	1	8	0.20	0.95			6	130	5.40	5.63
1986-87	—	—	—	0.07	19	1.14	13	1.21	4	14	1.73	1.27			4	46	1.73	3.69
1987-88	25	7	3.18	0.79	27	1.20	12	1.40	41	13	7.49	2.18			66	59	10.67	5.57
1988-89	6	—	2.12	—	78	3.33	9	0.70	29	—	7.04	—			35	87	9.16	4.03
1989-90	7	—	1.20	—	7	0.37		0.26	3	1	4.29	0.12			10	8	5.49	0.75
1990-91	31	2	9.30	0.30	18	0.71	3	0.37	8	—	3.96	—	10	2.22	49	23	15.48	1.38
1991-92	22	1	9.51	0.05	32	0.72	1	0.24	9	—	5.21	—	20	8.10	51	34	22.82	1.01

APPENDIX - 16

Advance of loans under different schemes by Ponneri Co-operative Land Development Bank, Ponneri from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal.				Loans under I.R.D.P.		Loans under Massive Programme		Loans under Schemes.						Total		
	No.		Amount		No.	Amount.	No.	Amount.	No.		Amount				No		Amount
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.					
1981-82	9	—	2.18	—							0.02	—			9		2.20
1982-83	29	22	11.43	1.67	80	1.04	—	—	—	—	0.04	—			131		14.18
1983-84	15	20	9.44	0.90	292	4.71	15	0.69	3	—	0.13	—			345		15.89
1984-85	29	18	11.66	1.08	97	2.11	30	2.89	2	—	0.22	—			176		17.96
1985-86	37	17	20.62	0.98	123	1.97	20	2.12	8	—	1.15	—			205		26.84
1986-87	4	3	0.36	0.17	50	1.43	32	0.99	33	—	11.07	—			122		14.02
1987-88	21	5	2.11	0.52	16	0.78	107	2.80	65	45	19.44	3.73			259		29.38
1988-89	27	7	6.02	1.57	49	1.20	45	1.65	107	13	22.83	1.45			248		34.72
1989-90	—	—	0.14	—	14	0.75	4	0.31	28	5	19.88	1.45			51		22.53
														NFS		Total	
1990-91	14	3	2.97	0.74	—	—	4	0.15	24	13	22.55	22.55	0.55	10.30		-	59.84
1991-92	32	8	10.58	2.65	17	0.65	—	—	11	30	20.15	7.13	72.44	·		-	113.60

APPENDIX - 17

Advance of loans under different schemes by Poonamallee Co-operative Land Development Bank, Poonamallee from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal.				Loans under I.R.D.P.		Loans under Massive Programme		Loans under Schemes.						Total	
	No.		Amount		No.	Amount.	No.	Amount.	No.		Amount				No	Amount
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.				
1981-82	18	6	4.95	0.39	88	1.33	—	—	1	—	—	0.01			113	6.68
1982-83	11	10	5.63	0.73	205	3.22	—	—	10	4	0.56	0.21			240	10.35
1983-84	9	8	2.68	0.39	128	2.04	41	0.66	21	42	1.17	1.09			249	8.03
1984-85	10	10	2.60	0.64	101	2.77	10	0.71	7	2	6.02	0.33			140	13.07
1985-86	24	16	3.51	0.94	92	3.20	52	1.69	28	3	17.09	0.30			215	26.73
1986-87	4	3	1.26	0.15	177	5.92	63	2.51	41	·	9.02	—			288	18.86
1987-88	37	10	4.03	1.01	137	5.32	76	4.13	135	16	15.54	2.17			411	32.20
1988-89	9	—	2.03	—	102	4.01	18	1.69	73	29	17.61	1.98			231	27.32
1989-90	1	—	0.18	—	52	1.98	9	1.06	20	—	11.37	—			82	14.59
													NFS		Total	
1990-91	15	2	8.37	0.12	34	0.97	9	0.47	14	3	11.18	1.79	41	7.07	118	29.97
1991-92	26	6	25.38	0.53	9	0.33	7	0.35	34	8	18.65	0.91	26	6.71	116	52.86

APPENDIX - 18

Advance of loans under different schemes by Saidapet Co-operative Land Development Bank, Saidapet from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				Loans under I.R.D.P.		Loans under Massive Programme		Loans under Schemes				NFS		Total	
	No.		Amount		No.	Amount	No.	Amount	No.		Amount		No.	Amount	No	Amount
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.				
1981-82	7	1	1.48	0.06	—	—	—	—	—	—	—	—			8	1.54
1982-83	3	8	1.95	0.47	—	—	—	—	—	—	—	—			11	2.42
1983-84	3	24	1.17	0.71	111	1.82	3	0.11	—	—	—	—			141	3.81
1984-85	9	4	4.11	0.34	68	2.00	6	0.28	—	—	—	—			87	6.73
1985-86	10	7	8.42	1.43	70	3.17	4	0.17	—	—	—	—			91	13.19
1986-87	1	—	1.00	—	31	1.83	8	0.55	10	—	1.90	—			50	5.28
1987-88	10	—	0.53	—	14	0.53	7	0.48	82	34	8.98	7.78			147	18.30
1988-89	10	—	3.17	—	—	—	—	0.02	29	—	9.84	0.54			39	13.57
1989-90	6	—	3.28	—	—	—	—	—	34	—	8.95	0.10			40	12.33
1990-91	9	8	2.43	0.60	—	—	—	—	9	7	14.95	0.50	10	2.99	43	21.47
1991-92	1	—	1.93	—	6	0.27	—	—	11	—	11.65	0.15	3	1.30	21	15.30

APPENDIX - 19

Advance of loans under different schemes by Tiruttani Co-operative Land Development Bank, Tiruttani from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				Loans under I.R.D.P.				Loans under Massive Programme				Loans under Schemes				Total	
	No.		Amount		No		Amount		No		Amount		No		Amount		No	Amount
	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.		
1981-82	1	-	0.63	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.63
1982-83	20	3	6.05	0.22	-	12	-	0.32	-	-	-	-	-	-	-	-	35	6.59
1983-84	15	2	1.62	0.12	-	67	-	1.53	-	19	-	0.95	16	11	0.62	0.45	130	5.29
1984-85	3	-	2.27	0.04	-	60	-	1.52	-	21	-	1.65	-		-	-	84	5.48
1985-86	10	1	6.65	0.04	-	14	-	0.59	-	12	-	1.39	5	6	0.45	0.24	48	9.36
1986-87	3	1	2.65	0.15	-	19	-	0.38	-	14	-	1.29	10	1	1.65	0.08	48	6.20
1987-88	34	2	2.94	0.25	-	32	-	1.43	-	32	-	1.34	67	8	7.35	0.61		
1988-89	6	-	2.78	-	-	20	-	0.96	-	9	-	0.79	55	19	5.82	0.79		
1989-90	5	-	0.76	-	-	-	-	-	-	8	-	0.55	8	15	4.06	0.45		

Year	Loans under Normal				Loans under I.R.D.P.				Loans under Massive Programme				Loans under Schemes				Loans under Non Formal Sector		Total	
	No.		Amount		No		Amount		No		Amount		No		Amount		No	Amount	No	Amount
	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.				
1990-91	8	15	0.81	0.90	-	27	-	0.84	-	3	-	0.25	10	3	12.58	0.15	2	0.80	68	16.35
1991-92	13	6	1.41	0.65	-	17	-	0.84	-	1	-	0.08	13	6	11.70	0.60	8	2.69	64	17.97

B.F. Big Farmers S.F. Small Farmers

APPENDIX - 20

Advance of loans under different schemes by Tiruvallure Co-operative Primary Land Development Bank, Tiruvallure from 1981-82 to 1991-92

(Rs. in lakhs)

YEAR	Loans Under Normal No.		No.		IRDP No.	IRDP Amount	Massive No.	Massive Amount	Schemes No		Schemes Amount				Total No	Total Amount
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.				
1981-82	3	1	1.08	0.04	-	-	-	-	-	-	-	-			4	1.12
1982-83	12	9	6.84	0.48	107	1.47	-	-	-	3	-	0.21			131	9.00
1983-84	9	9	4.93	0.74	181	3.67	20	0.94	-	14	-	0.46			233	10.74
1984-85	7	4	5.16	0.04	134	3.34	24	1.46	-	5	-	0.38			174	10.38
1985-86	15	5	12.61	0.48	161	4.54	21	1.09	-	7	-	0.58			209	1.30
1986-87	4	-	3.56	-	30	1.76	42	1.88	-	39	-	3.69			115	10.89
1987-88	23	-	2.22	-	42	1.27	28	1.49	65	-	12.39	-			158	17.37
1988-89	11	-	1.37	-	41	1.91	50	1.46	53	40	13.40	3.87			195	22.01
1989-90	5	2	2.86	0.25	..		11	0.46	17	28	6.80	2.27			63	12.64
													NFS		Total	
1990-91	17	5	1.53	0.78	11	0.45	17	0.34	30	7	23.82	1.42	9	2.65	96	30.99
1991-92	21	5	15.56	1.39	..	.....	16	0.66	60	23	25.29	2.32	3	1.62	128	46.84

APPENDIX-21

Advance of loans under different schemes by Thiruvalangadu Co-operative Land Development Bank, Thiruvalangadu from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans on Normal				IRDP		IRDP/AL		Massive		ARDC II				Pallipet sheep.	
	No.		Amount		No.	Amount	No.	Amount	No.	Amount.	No.		Amount.		No.	Amount.
	B.F.	S.F.	B.F.	S.F.							B.F.	S.F.	B.F.	S.F.	S.F.	
1981-82	—	—	—	—	—	—	—	—	—	—	—	—	—	1.06	—	—
1982-83	6	—	2.52	—	—	—	—	—	—	—	—	—	—	—	—	—
1983-84	5	—	0.86	—	—	—	57	0.59	1	0.03	—	—	—	—	—	—
1984-85	—	—	—	—	23	0.72	82	2.12	8	0.35	—	—	—	—	—	—
1985-86	6	1	4.55	0.11	10	0.38	57	1.20	12	1.18	—	—	—	—	—	—
1986-87	2	—	1.05	—	18	0.1	3	0.09	19	1.44	—	—	—	—	—	—

D.R's83 No.	D.R's83 Amount. S.F.	Non-Sunday Sheet No.	Non-Sunday Sheet Amount. S.F.	Monidiuary No.	Monidiuary Amount. B.F.	Total No. B.F.	Total No. S.F.	Total Amount B.F.	Total Amount S.F.
—	—	—	—	—	—	—	—	—	1.06
—	—	—	—	—	—	6	—	2.52	—
4	0.20	—	—	—	—	5	42	0.86	0.82
—	—	—	—	—	—	—	113	—	3.19
—	—	9	0.68	—	—	6	89	4.55	3.55
—	—	7	0.34	2	0.20	4	47	1.25	2.58

YEAR	NORMAL No.		NORMAL Amt		IRDP No.	IRDP Amt	MASSIVE No.	MASSIVE Amt	SCHEME No.		Amount B.F.		NFS No.	NFS Amo-unt	TOTAL No.	TOTAL Amount
1987-88	10	.	0.84	....	41	1.95	33	2.28	73	....	10.37	....	..	....	157	15.44
1988-89	6	..	3.66	....	13	0.56	11	2.28	51	9	16.33	....	..	....	81	13.83
1989-90	..	..	0.77	....	2	0.15	20	2.94	10	....	4.15	....	..	....	32	7.31
1990-91	18	..	2.23	....	8	0.36	19	1.49	18	....	5.02	....	1	0.24	64	9.34
1991-92	32	..	6.10	....	11	0.44	17	2.39	43	....	21.42	....	1	0.36	104	30.71

APPENDIX - 22

Advance of loans under different schemes by Uttiramerur Co-operative Land Development Bank, Uttiramerur from 1981-82 to 1991-92

(Rs. in lakhs)

Year	Loans under Normal				Loans under I.R.D.P.		Loans under Massive		Loans under Schemes				Total			
	No.		Amount		No	Amount	No	Amount	No		Amount		No		Amount	
	B.F.	S.F.	B.F.	S.F.					B.F.	S.F.	B.F.	S.F.	B.F.	S.F.	B.F.	S.F.
1981-82	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	0.03	-
1982-83	14	-	2.22	-	42	0.86	-	-	-	10	-	0.46	14	52	2.22	1.32
1983-84	5	2	0.71	0.12	75	1.64	3	0.11	-	49	-	2.27	5	129	0.71	4.14
1984-85	20	-	3.51	-	35	0.93	17	1.32	-	10	-	0.79	20	62	3.51	3.04
1985-86	34	5	4.73	0.42	96	2.76	35	2.50	-	4	-	0.57	34	140	4.73	6.36
1986-87	11	-	2.12	-	14	0.60	50	3.49	-	45	-	3.90	11	109	2.12	7.99
1987-88	22	-	1.58	-	23	1.08	134	7.96	136	-	13.91	-	158	157	15.49	9.04
1988-89	11	-	1.81	-	52	1.94	26	2.56	62	8	3.31	1.22	73	86	5.12	5.72
1989-90	1	-	0.25	-	6	0.27	21	2.76	8	14	2.29	0.62	9	41	2.54	3.65
													NFS		Total	
															No	Amount
1990-91	10	17	0.83	1.72	4	0.34	12	1.94	6	5	7.03	1.35	5	1.43	59	13.74
1991-92	8	8	1.18	0.83	-	-	17	2.92	10	24	6.65	2.88	4	1.62	71	16.08

APPENDIX - 23

Advance of loans under different schemes by the Walajabad Co-operative Land Development Bank, Walajabad from 1981-82 to 1991-92

(Rs. in lakhs)

YEAR	Loans Under Normal				Loans Under IRDP		Massive		Loans Under Schemes				NFS		Total	
	No. B.F.	Amount SF	No. BF	Amount SF	No.	Amount	No.	Amount	No BF	No SF	Amount BF	Amount SF	No.	Amount	No	Amount
1981-82	4	8	1.80	0.60	3	0.10	-	-	-	-	0.13	-			16	2.63
1982-83	15	5	1.39	0.53	5	0.08	-	-	5	12	0.57	1.32			42	3.89
1983-84	4	7	1.13	0.54	6	0.14	10	0.91	4	3	0.61	0.49			34	3.82
1984-85	5	3	0.82	0.17	58	1.69	20	1.86	5	-	0.62	-			91	5.16
1985-86	13	8	3.95	0.29	7	0.17	38	2.50	1	-	0.21	-			67	7.12
1986-87	12	3	0.56	0.10	9	0.54	52	3.26	4	-	2.04	-			79	6.50
1987-88	3		0.29	-	24	0.98	76	4.77	36	-	2.55	-			139	8.59
1988-89	4		0.41	-	7	0.33	24	3.44	5	-	0.34	-			40	4.52
1989-90	3	6	3.09	0.42	3	0.13	25	1.70	3	3	0.13	0.04			43	5.51
1990-91	2	84	0.04	8.08	2	0.10	22	2.67	5	-	5.83	-	2	0.60	117	17.32
1991-92	25	24	11.69	3.57	-	-	20	2.51	61	50	17.95	3.90	9	2.73	189	42.35

APPENDIX - 24

Investmentwise / Agencywise Drawal of Refinance in Chengalpattu M.G.R. District by National Bank for Agriculture and Rural Development

Sl. no.	Purpose	1987 - 88				1988-89			
		CBS	CCB		Total	CBS	CCB	LDB	Total
1.	Minor Irrigation	3.781	—	46.470	50.251	9.333	—	3.021	12.354
2.	Land Development	—	—	—	—	0.858	—	—	0.858
3.	Farm Mechanisation	89.351	—	11.870	101.221	22.812	—	8.978	31.790
4.	P & H	13.339	—	14.070	27.409	8.541	1.537	16.713	26.971
5.	Dairy	47.828	16.064	18.653	82.545	82.328	10.400	6.049	98.785
6.	Forestry	1.173	—	3.732	4.905	5.682	—	10.657	16.339
7.	Biogas	21.635	1.021	—	22.656	6.018	1.560	—	7.978
8.	Sheep/Goat/Piggery	17.280	16.166	15.399	48.845	1.280	3.220	19.687	34.187
9.	Poultry	13.137	—	13.702	26.839	29.710	—	16.109	45.189
10.	I.R.D.P.	167.404	1.249	20.235	188.888	273.081	41.212	23.812	338.105
11.	Others	19.385	3.616	9.353	32.358	4.171	0.600	23.730	28.501
12.	I.S.B.	22.913	0.594	—	23.507	—	—	—	—
13.	Inland Fisheries	9.991	—	—	9.991	1.907	—	4.808	5.987
14.	Marine Fisheries	26.550	—	—	26.550	51.623	—	—	51.623
15.	N.F.S.	—	31.170	—	31.170	16.552	26.523	—	43.075
16.	R.E.C.	37.193	—	—	37.193	60.983	—	—	60.983
17.	MAP	67.517	—	—	67.517	44.946	0.892	30.959	76.797
18.	S.C.	49,491	—	—	49.391	—	—	—	—
	Total	607.872	69.880	153.484	831.236	619.825	85.952	163.795	869.572

Report of the National Bank for Agriculture and Rural Development, dated 5 March 91

P&H - Plantation and Horticulture

1989-90			
CBS	CCB	LDB	Total
15.283	—	3.571	18.854
—	—	2.795	2.795
44.428	1.806	37.289	81.717
16.937	00	9.436	28.179
55.267	15.035	1.140	71.442
4.000	—	3.431	7.431
8.985	0.297	—	9.282
2.467	1.692	6.952	11.111
57.198	—	8.595	65.793
273.590	46.205	11.768	331.568
8.299	0.590	7.360	16.249
—	—	—	—
20.566	—	2.822	23.388
—	—	—	—
34.227	49.103	—	83.330
150.472	—	15.037	150.472
66.355	1.551	—	82.943
—	—	—	—
758.074	116.279	110.279	984.549

APPENDIX - 25

Loans advanced to farmers from 1983-84 to 1990-91

(Rupees in lakhs)

Financial Year	*Normal including Tractor*	*NABARD Scheme*	*IRDP*	*Massive and others*	*Total*
1	*2*	*3*	*4*	*5*	*6*
1983-84	45.67	13.50	19.60	13.60	92.45
1984-85	66.23	23.53	27.62	54.27	171.65
1985-86	108.38	26.51	24.39	23.69	182.97
1986-87	47.91	38.15	31.07	30.50	147.63
1987-88	11.62	120.68	13.66	40.44	186.40
1988-89	34.30	151.91	22.75	30.20	239.16
1989-90	17.11	102.67	5.21	13.68	138.67
1990-91	61.12	162.68	5.95	9.29	239.04

APPENDIX - 25 *(Cont.)*

Agencywise performance under Annual Credit Plan

Banks	*1990-91* Target	*1990-91* Achievements	*1991-92* Target	*1991-92* Achievements
		(Rs. in lakhs)		
Commercial Bank	9050.70	10190.01	12101.16	11863.32
K.C.C.B.	1416.06	1406.24	1936.86	1032.83
SLDB (PLDB's)	350.00	262.99	177.92	256.13
Others (TIIC etc.)	2820.00	2705.60	2880.00	1377.08
Total	13636.76	14564.84	17095.94	14529.36

Activitywise performance during 1990-91 and 1991-92

Activity/Sector	*1990-91* Target	*1990-91* Achievements	*1991-92* Target	*1991-92* Achievements
		(Rs. in lakhs)		
1. Crop loans	4399.92	5193.77	6311.64	6222.62
2. Agricultural Term Loans	1325.00	1222.16	1493.50	1182.64
3. Allied Activities	1107.48	1526.52	2443.84	1352.27
4. NFS & SSI	3840.54	4116.82	4035.15	3427.17
5. Trade & Services	1586.27	2500.95	2651.81	2344.86
Total	12559.21	14560.22	16935.94	14529.36

APPENDIX - 25 *(Cont.)*

Activity-wise details of National Bank's refinance

Sl no.	*Activity*	*1990-91*	*1991-92*	
		(Rupees in lakhs)		
1.	MI	55.659	79.252	*
2.	REC	107.209	81.690	
3.	LD	-	15.987	
4.	FM	198.333	157.421	
5.	P&H	9.954	28.560	**
6.	Poultry	89.053	163.319	
7.	Sheep/Goat/Piggery	13.196	24.026	
8.	Inland Fisheries	46.588	108.210	
	Marine Fisheries @		29.511	@
9.	Dairy Development	121.895	132.307	
10.	Forestry	6.844	3.787	
11.	IRDP (FS) }	382.484	129.935	
12.	IRDP (ISB) }		137.994	
13.	NFS	34.131	82.868	
14.	NPBD	2.414	0.630	
15.	Others	25.828	30.647	
		1093.588	1206.144	

* Includes MAP

** Includes Brakkish

@ Includes Sericulture

APPENDIX - 25 *(Cont.)*

PLP Projections for VIII Five Year Plan

Sl. no.	*Sectorwise*	*1992-93*	*1993-94*	*1994-95*	*1995-96*	*1996-97*
				(Rs. in lakhs)		
1.	Minor Irrigation	399.28	395.60	415.35	426.15	457.95
2.	Land Development	31.50	100.50	110.55	121.60	133.75
3.	Farm Mechanisation	430.00	692.05	762.95	839.25	923.15
4.	Plantation and Horticulture including Sericulture	87.67	277.87	305.75	336.61	370.35
5.	Animal Husbandry (Dairy)	238.50	426.00	468.50	515.35	556.80
6.	AH. Poultry	139.00	295.50	321.50	353.65	389.00
7.	AH. Others	176.19	164.55	181.00	199.10	219.00
8.	Fisheries	104.55	252.12	277.20	304.90	335.40
9.	Forestry and Wasteland Development	21.60	47.25	51.95	57.15	62.85
10.	Storage and Market Yards	3.60	13.85	15.25	16.75	18.40
11.	Other Agri and allied Activities	149.00	104.18	113.80	124.89	-137.30
12.	Non-farm Sectors & SSI	5500.00	4985.00	5486.00	6034.00	6640.00
13.	Crop Loans	7300.00	7700.00	8900.00	10200.00	11700.00
14.	Weaver's Credit	-	2530.00	2780.00	3066.00	3360.00
15.	OPS.	4000.00	2845.00	3170.00	-3480.00	3820.00
	Total	18580.89	20829.47	23359.80	26079.40	29123.95

APPENDIX - 25 *(Cont.)*

Agencywise Recovery Performance during 1990-91

Agency	Agriculture		Industry		Trade and Services		Total Priority Sector		
	Demand	Collection	Demand	Collection	Demand	Collection	Demand	Collection	% of Collection
Commercial Bank	6521.58	3774.36	4973.11	2453.47	1623.19	677.19	13117.88	7011.03	59.95
Kancheepuram Consumer Co-op. Bank	2243.37	1192.28					2243.37	1192.08	53.13
State Land Development Bank	525.32	138.26					252.32	138.26	26.32
Total	9290.27	5105.60	4973.11	2453.47	1623.19	677.19	15886.57	8341.37	52.50

APPENDIX - 26

Progress made by Life Insurance Corporation of India in the district during the year 1991-1992

Name of Branch	*No. of Policies*	*Sums Insured* (in lakhs)	*Fresh Premium* (in lakhs)	*Renewed Premium* (in lakhs)
Tambaram	8596	2673.58	56.80	42076.00
Chengalpattu	5526	1301.26	26.15	16650.00
Kancheepuram	5926	1407.43	34.56	20398.00
Ponneri	7021	2810.93	37.60	5700.00
Tiruvallur	6693	1679.00	36.96	27334.00
Tiruttani	3156	771.81	16.53	34.00
Total	36918	10644.05	208.60	12192.00

Report of the Manager (Planning), LIC of India, Madras Division, dated 29 August 1992.

APPENDIX - 27

Progress made by United India Insurance Company in this district

Name of the Divisional Office	*Date of Inauguration of the Office*	*Premium Collected* 1989-90	1990-91
		(Rupees in lakhs)	
1. Kancheepuram	28.12.1984	27.65	31.88
2. Ambattur	31.3.1990	-	21.47
Name of the Branch Office			
1. Chengalpattu	5.10.1984	28.03	38.79
2. Tambaram	31.10.1984	18.55	29.37
3. Ambattur	31.5.1987	53.02	49.77
4. Tiruvallur	28.12.1984	48.05	39.11
5. Red Hills	31.3.1989	1.06	15.42
6. Avadi	30.3.1990	-	19.59

APPENDIX - 28

National Insurance Company Ltd., particulars of amount insured, premium collected, number of lives covered and number of policy holders

Year	*Amount Insured* Rs.	*Premium collected* Rs.	*No.of lives covered*	*No.of Policy-holders*
1987	13,12,000/-	1,51,624/-	410	118
1988	40,81,000/-	1,69,314/-	4,324	411
1989	7,15,000/-	98,402/-	2,862	386
1990	3,70,000/-	1,28,198/-	1,234	425
1991 (up to October 1991)	10,28,000/-	1,99,897/-	3,428	324

Report of the Assistant Branch Manager, National Insurance Co. Ltd., Kancheepuram Branch, dated 14 November 1991.

APPENDIX - 29

Business done by the branch offices of the Oriental Insurance Company, in this district from 1986 to 1991

Sl. no.	Branch Office	Date of Inception	1986-87		1987-88		1988-89		1989-90		1990-91	
			Prem.	Policy	Prem.	Policy	Prem.	Policy	Prem	Policy	Prem.	Policy
1.	B.O. Guindy	24-7-1981	60.05	11654	63.70	11211	77.01	13393	57.50	8,558	66.13	8113
2.	B.O. Tambaram	20-3-1986	10.94	1876	19.47	3438	34.73	5672	34.89	5118	46.49	6419
3.	B.O. Kancheepuram	30-6-1980	25.40	5158	26.25	4317	27.35	4481	24.47	3893	32.36	4450
4.	B.O. Tiruttani	17-11-1987	-	-	2.68	436	22.34	3399	20.83	3351	29.15	3062
5.	B.O. Porur	13-12-1991									4.69 Up to March '92)	

APPENDIX - 30

Business done by the two Divisional Offices of the New India Assurance Co., in this district

Name of the Divisional Office	*Year*	*Fire*	*Marine cargo*	*Marine Hull*	*Motor*	*Traditional Business*	*Non-trade Business*	*Total*
Guindy and Kanchi Divisional Office	1990-91	40.7	31.3	22.8	88.8	30.8	58.2	273.9
-do-	1991-92	54.3	47.6	26.0	103.0	46.9	60.9	338.7

Report of the Manager, The New India Assurance Company Ltd., Madras, dated 30 October 1992

APPENDIX - 31

Chengalpattu MGR District Collection of Small Savings (Rs. in lakhs)

Sl.no.	*Year*	*Target*	*Gross*	*Net*
1.	1972-73	—	228.90	54.33
2.	1973-74	—	239.32	53.05
3.	1974-75	—	426.41	67.00
4.	1975-76	—	413.72	71.91
5.	1976-77	—	472.52	82.87
6.	1977-78	—	525.73	57.60
7.	1978-79	—	684.30	133.79
8.	1979-80	—	740.45	180.60
9.	1980-81	325	882.51	221.62
10.	1981-82	325	970.89	215.53
11.	1982-83	325	1142.69	335.59
12.	1983-84	400	1587.61	488.17
13.	1984-85	605	2244.60	922.15
14.	1985-86	1130	2489.60	956.86
15.	1986-87	1638	2797.88	808.17
16.	1987-88	1700	2843.00	790.00
17.	1988-89	1600	3321.00	855.00
18.	1989-90	2900	4788.00	2173.00
19.	1990-91	3300	8984.00	2014.00
20.	1991-92	3900	8842.00	3911.00

Report of the Director of Small Savings, Madras, dated 7 December, 1992

APPENDIX - 32

Distribution of import Overseas Cargo according to regionwise during 1986-87

(in tonnes)

Sl. no.	Commodity	U.S.A.	U.S.S.R.	Japan	West Germany	West Europe	South America
1	2	3	4	5	6	7	8
1.	Cotton	-	-	-	-	-	-
2.	Cotton Warke						
	Twist & Yarn	-	1	-	187	-	-
3.	Asbestos Abre	370	3125	-	-	1500	1226
4.	Other Fibres	625	4	1791	271	1862	10
5.	Wheat	1897	-	-	-	-	-
6.	Others	47499	-	-	-	360	-
7.	Hides & Skins	15	-	18	-	-	-
8.	Leather goods	197	-	4	117	250	-
9.	Iron & Steel						
	Manufactured	4924	931	120461	58880	74829	199
10.	Lubricants	29	-	14	-	37	-

Distribution of Import Overseas Cargo originwise from 1986-87 to 1989-90

APPENDIX - 32 *(Cont.)*

East Europe	East Africa	West Africa	Canada	South East Asian Countries	Others	Total
9	10	11	12	13	14	15
-	-	-	-	-	50	50
-	-	-	-	-	13	101
-	-	-	10145	-	1788	18226
3	-	2	99	533	594	4994
-	-	-	-	-	-	1897
-	-	-	2994	3211	8659	62723
-	-	-	-	125	256	414
-	-	-	-	91	115	774
39264	-	275	38	4769	18925	323495
-	-	38	-	22983	5000	28098

APPENDIX - 32 *(Cont.)*

1	2	3	4	5	6	7	8
11.	Phasphate	-	-	-	-	-	-
12.	Other Chemical manures	25585	27811	-	115093	-	-
13.	Rubber	196	15	6470	546	3588	-
14.	Chemicals other than Soda	62285	41	5721	4157	23578	19
15.	Wattle Cetract	-	-	-	20	18	65
16.	Other dyeing and tanning substances	77	-	193	2117	2303	5

APPENDIX - 32 *(Cont.)*

9	*10*	*11*	*12*	*13*	*14*	*15*
-	-	-	-	-	176565	176565
125755	6740	-	196499	31644	91839	620966
-	-	4	13	39329	1519	51680
110	14728	86783	25	7520	61645	266706
-	477	-	-	361	5248	6774
32	-	23	2	289	21	5062

APPENDIX - 32 *(Cont.)*

For 1987-88

(in tonnes)

Sl. no.	*Cargo*	*U.S.A.*	*U.S.S.R.*	*Japan*	*West Germany*	*West Europe*	*South America*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Cotton Waste and Twist & Yarn	-	-	-	-	-	-
2.	Rice	-	173	-	-	-	-
3.	Others	38073	-	-	-	2	-
4.	Hides & Skins	4	3188	11	-	26	12
5.	Leather goods	84	-	29	20	130	56
6.	Iron & Steel (Manufactured)	240	4040	110068	75125	125274	4026
7.	Lubricants	29	-	-	-	2	4834
8.	Phosphate	-	-	-	-	-	-
9.	Other Chemical manures	-	16304	-	118492	13187	-
10.	Rubber	380	-	6578	542	4681	-

APPENDIX - 32 *(Cont.)*

East Europe	East Africa	West Africa	Canada	South East Asia	Others	Total
9	*10*	*11*	*12*	*13*	*14*	*15*
-	-	-	-	-	27	27
-	-	-	-	-	-	173
-	-	-	-	387	7260	45722
-	18	33	1	111	211	3615
-	-	27	-	108	210	664
3412	-	-	2	2955	35690	391832
-	-	-	-	40919	-	45784
-	-	30645	-	-	138509	169154
74220	-	-	-	-	95485	317688
5	-	-	699	41234	1534	55653

APPENDIX - 32 *(Cont.)*

1	2	3	4	5	6	7	8
11.	Chemical other than Soda	33672	5	8896	5230	33729	13583
12.	Wattle extract	-	-	-	-	4	1331
13.	Other dyeing and tanning substances	314	-	506	2461	2644	-

APPENDIX - 32 (Cont.)

9	10	11	12	13	14	15
884	-	73750	50	5985	7553	183337
18	2172	6392	-	116	119	10152
94	-	-	10	370	234	6633

APPENDIX - 32 *(Cont.)*

For the year 1988-89

(in tonnes)

Sl. no.	*Cargo*	*U.S.A.*	*U.S.S.R.*	*Japan*	*West Germany*	*West Europe*	*South America*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Milk Powder	1023	-	-	472	1470	-
2.	Other Dairy Products	-	-	-	13	1	-
3.	Oil Seeds	-	-	-	-	-	-
4.	Textile Fibres	125	-	18	1654	173	1
5.	Synthetic Fibres	1558	-	5347	42	1924	-
6.	Hides & Skins	7	7783	-	29	241	4
7.	Rubber-raw	-	-	-	-	1326	-
8.	Rubber Synthetic	857	-	5624	438	7030	-
9.	Coal	-	-	-	-	-	-
10.	Coke briquettes	-	-	1275	-	3	-

APPENDIX - 32 *(Cont.)*

(in tonnes)

East Europe	East Africa	West Africa	Canada	South East Asian countries	Others	Total
9	10	11	12	13	14	15
-	-	-	-	39	-	3004
-	-	-	-	2	116	132
-	-	-	-	23	-	23
-	1342	553	-	164	12202	22132
-	-	-	-	310	2950	12131
-	49	77	15	59	836	9110
-	-	-	-	50802	730	52858
-	-	-	11	394	995	15349
-	-	27745	-	-	89356	117101
-	-	-	-	33108	14263	159734

APPENDIX - 32 *(Cont.)*

1	2	3	4	5	6	7	8
11.	Wax	1	-	7978	668	2024	-
12.	Chemicals	59249	33	6622	4148	282561	5564
13.	Phosphate	-	-	-	-	-	-
14.	Muriate of Potash	-	-	-	140268	25162	-
15.	Urea	-	-	-	-	-	-
16.	Wattle Extract	-	-	322	-	-	2067
17.	Other dyeing and tanning substance	429	-	87	2294	2734	16
18.	Leather Goods	109	18	27	30	192	-
19.	Rubber Products	6	74	903	10	226	-
20.	Pig Iron	-	-	-	-	-	-
21.	Iron & Steel Scrap	-	-	-	-	-	-

APPENDIX - 32 (Cont.)

9	10	11	12	13	14	15
6	-	-	-	4302	-	14979
847	-	87423	1112	21442	28617	253413
-	-	21780	-	-	196846	218626
70542	-	-	97838	-	66800	400610
2624	-	-	-	-	-	2624
-	1746	6505	-	1	1	10702
13	32	-	17	308	160	6090
-	-	-	-	129	224	729
248	-	-	-	512	81	2060

APPENDIX - 32 *(Cont.)*

For the year 1989-90

(in tonnes)

Sl. no.	*Products*	*U.S.A.*	*U.S.S.R.*	*Japan*	*West Germany*	*West Europe*	*South America*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Milk Powder	200	-	-	63	2763	-
2.	Other Dairy Products	-	-	-	-	-	-
3.	Oil Seeds	-	-	-	-	-	-
4.	Synthetic Fibres	1018	-	3916	213	2750	-
5.	Hides and Skins	28	3949	21	208	347	390
6.	Rubber Synthetic	488	-	6116	1259	4788	-
7.	Coal	-	-	-	-	-	-
8.	Coke & Briquettes	-	-	1246	-	-	-
9.	Wax	23	-	2661	754	2604	-
10.	Chemicals	42445	80	5364	9950	31231	17099

APPENDIX - 32 *(Cont.)*

East Europe	*East Africa*	*West Africa*	*Canada*	*South East Asian Countries*	*Others*	*Total*
9	*10*	*11*	*12*	*13*	*14*	*15*
-	-	-	-	39	36	3101
-	-	-	-	4	23	27
-	-	11	-	-	-	11
-	-	-	-	360	2589	10846
-	97	400	-	227	1793	7460
-	-	1	-	1118	1746	15516
-	-	-	-	44227	-	44227
-	-	-	-	841	118521	120608
-	-	-	-	4230	6959	17231
345	-	71647	107	10634	21455	210357

APPENDIX - 32 *(Cont.)*

1	2	3	4	5	6	7	8
11.	Phosphate	-	-	-	-	-	-
12.	Muriate of Potash	57063	60408	-	87451	-	-
13.	Wettle Extract	-	124	-	-	1	1748
14.	Other Dyeing and Tanning	844	-	414	3005	3120	5
15.	Leather Goods	185	85	7	68	181	417
16.	Rubber Products	13	14	277	13	134	81267
17.	Pig Iron	-	-	-	-	-	-
18.	Iron & Steel Scrap	260175	-	-	24145	104861	-

APPENDIX - 32 *(Cont.)*

9	10	11	12	13	14	15
-	-	13600	-	-	182451	196051
129966	-	-	25589	-	54399	414835
-	1081	8141	1	1	69	11165
-	16	-	-	404	397	8205
3	-	-	-	219	435	1600
134	-	-	-	940	62	1587
-	-	-	-	-	-	81267
-	-	1185	34	72052	20588	483040

Report from the Traffic Manager, Madras Port Trust, dated 23 October 1991

APPENDIX - 33

Trade and Commerce in Chengalpattu-MGR District

Sl. no.	*Name of the Town*	*Name of three most important Commodities - Imported*			*Name of the three most important Commodities - Exported*		
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Alandur	Rice	Steel	Wood	Valves for Cars and Tractors	-	-
2.	Ambattur	-	-	-	-	-	-
3.	Ammavarikuppam	-	-	-	Handloom cloth	-	-
4.	Anakaputhur	Rice	Oil	-	-do-	-	-
5.	Arani	-	-	-	-	-	-
6.	Avadi	-	-	-	-	-	-
7.	Kancheepuram	Jari	Timber	Cycle and Cycle parts	Cotton yarn and sanitary wares	Cotton waste and Brass vessels	Silk sarees

APPENDIX - 33 *(Cont.)*

Name of three most important commodities manufactured		
9	*10*	*11*
Car-valves and Agricultural tools	-	-
Dunlop Tyres and Tubes	T.I. Cycles	T.I. Millar Dynamo and Cycle chains
Handloom Cloth	-	-
Handloom Cloth	-	-
Handloom Cloth	-	-
Fertilizer	Tube Products	Engineering Goods
Handloom Cloth	Engineering Goods	Steel Furniture

APPENDIX - 33 *(Cont.)*

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
8.	Nattapettai	-	-	-	Paddy	Groundnut	Vegetables
9	Putteri	-	-	-	-do-	-do-	-do-
10.	Sevilimedu	-	-	-	-do-	-do-	-do-
11.	Kannapalayam	-	-	-	-	-	-
12.	Kathirvedu	-	-	-	Yarn	-	-
13.	Kattivakkam	-	-	-	Lorry Chasis compound fertilizer	Parry sweets	Common Salt
14.	Kattupakkam	-	-	-	-	-	-
15.	Kunrathur	Tractors	Power Tiller	-	Handloom lungies	-	-
16.	Madavaram	-	-	-	Finished leather and its products	Wood	Automobile spareparts

APPENDIX - 33 *(Cont.)*

9	10	11
Handloom Cloth	-	-
-	-	-
-	-	-
Yarn	-	-
Lorry Chassis Compound Fertilizer	Parry Sweets	Common Salt
-	-	-
Handloom lungies	-	-
Automobile spare parts	Paints and Chemical fibre and petroleum products	Milk Products
-	-	-

APPENDIX - 33 *(Cont.)*

1	2	3	4	5	6	7	8
17.	Madurantakam	-	-	-	-	-	-
18.	Maduravoyal	-	-	-	Seafoods	Chemicals	Magnets
19.	Meenambakkam	Rice	-	-	Milk	-	-
20.	Nandambakkam	-	-	-	Drugs	Surgical Instruments	-
21.	Pallavaram	Hides	Yarn	Chemicals	Talcum Powder (Ponds)	Finishing leather and leather goods	Automatic Chemicals
22.	Pammal	Leather	-	-	Lungies	Iron materials	Leather
23.	Perungalathur	-	-	-	Standard Cars	-	-
24.	Poddattupeta	Yarn	Dyes	Weaving materials	Lungies	Sarees	Dhotties

APPENDIX - 33 *(Cont.)*

9	10	11
Gripe Water	Bricks and Tiles	-
-	-	-
Engineering tools	-	-
Drugs	Surgical Instruments	-
Talcum Powder (Ponds)	Gripe Water (woodwards)	Rubber goods (Gloves)
Lungies	Iron material	Leather
Standard Cars	-	-
Lungies	Sarees	Dhotties

APPENDIX - 33 *(Cont.)*

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
25.	Polichalur	Kerosene	-	-	Firewood	-	-
26.	Poonamallee	-	-	-	Jasmine flowers	Betal leaves	-
27.	Puzhal	-	-	-	Radiator	Screw	Prawns
28.	Pullicut	-	-	-	Fish	Prawns	Palm leaf articles
29.	Sittalapakkam	Rice	Wheat	Kerosene	Groundnut	-	-
30.	St. Thomas Mount *cum* Pallavaram	-	-	-	Hides and skins	-	-
31.	Tinnanur	-	-	-	Medicines	Textiles	-
32.	Thirukkalukundram	Sugar	Kerosene	Cement	Rice	Lungies	Milk

APPENDIX - 33 *(Cont.)*

9	*10*	*11*
-	-	-
-	-	-
Radiator	Screw	-
Palm leaf articles	-	-
-	-	-
Electrical Switcher and Transformers	Essence	M.S. Rods and Channels
Medicines	Textiles	-
-	- -	-

APPENDIX - 33 *(Cont.)*

1	2	3	4	5	6	7	8
33.	Thirunirmalai	Rice	Kerosene	Vegetables	-	-	-
34.	Tirusulam	Vegetable	-	-	-	-	-
35.	Tiruttani	-	-	-	-	-	-
36.	Tiruvallur	-	-	-	Paddy	-	-
37.	Uthiramerur	Cereals	Sugar	Milk Goods	Handloom cloth	Slipper leather	-

APPENDIX - 33 *(Cont.)*

9	10	11
-	-	-
-	-	-
-	Hosepipes	Bricks
-	Gloe	Bricks
-	Slipper Leather	-

District Census Handbook 1981, Part XIII-A Chengalpattu-MGR District pp.508 to 512

APPENDIX - 34

Turnover of Products transacted in Chengalpattu District 1991-92

Sl. no.	*Agricultural Produce*	*Agricultural produce transacted outside the Regulated Market*	*Agricultural produce transacted in Regulated Market*
1.	Paddy	3528.364	64.017
2.	Groundnut	86.146	71.704
3.	Gingelly	30.964	8.533
4.	Ragi	5.100	0.357
5.	Chillies	0.258	0.106
6.	Sugarcane/Jaggery	0.490	0.587
7.	Blackgram	1.926	0.470
8.	Horsegram	0.472	0.025
9.	Cumbu	14.804	1.443
10.	Soyabeans	0.204	0.303
11.	Greengram	0.202	0.010
	Total	3668.929	147.555

Report of the Secretary, Chengalpattu-M.G.R. District Market Committee, Kancheepuram, dated 26, November 1992.

APPENDIX - 35

The List of Regulated Markets, Co-operative marketing socities, daily shandies, seed depots in various Panchayats Unions

Sl. no.	Name of Panchayat Union	Regulated Market	Co-operative Marketing Societies	Daily Shandy	Seed Co-operative store	Fertiliser Depot	Fertiliser Private Dealers
1	2	3	4	5	6	7	8
1.	Gummidipoondi	1	1	1	2	22	20
2.	Minjur	1	-	1	3	16	15
3.	Cholavaram	-	-	-	1	8	10
4.	Ellapuram	-	1	-	-	12	25
5.	Poondi	-	-	1	3	8	30
6.	Tiruvallur	1	-	1	2	10	45
7.	Kadambathur	-	-	1	2	13	42
8.	Pallipattu	1	-	1	1	12	8
9.	R.K. Pet	1	-	-	2	10	9
10.	Tiruttani	1	1	1	1	12	12
11.	Thiruvelangadu	-	-	-	3	13	7

APPENDIX - 35 *(Cont.)*

1	2	3	4	5	6	7	8
12.	Poonamallee	-	-	1	-	-	-
13.	Sriperumbudur	1	-	1	1	-	5 •
14.	Kunrathur	-	-	-	-	15	-
15.	Puzhal	-	-	-	-	-	-
16.	Villivakkam	-	-	-	-	4	-
17.	St. Thomas Mount	-	-	-	-	12	-
18.	Kattankulathur	-	1	-	-	13	-
19.	Thirupporur	-	-	1	3	-	-
20.	Thirukalukundram	-	-	1	1	10	-
21.	Kancheepuram	1	1	1	2	13	25
22.	Walajabad	-	-	-	2	2	-
23.	Uthiramerur	1	-	1	3	27	23
24.	Madurantakam	1	1	1	3	60	10
25.	Acharapakkam	1	1	1	3	12	3
26.	Chittamur	-	-	1	-	17	-
27.	Lathur	-	-	2	2	13	-
	Total	11	7	18	40	334	279

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CHAPTER - 7

COMMUNICATIONS

The Chengalpattu MGR district which is one of the close proximities of the borders of the Madras district is served well by a network of roads, railways, canals, waterways and airways and through a comprehensive network of post and telegraphs and telecom systems. The roads of the district link it with Madras in the North, the South Arcot district in the South and the North Arcot district in the West. It has 13183 kms. of roads consisting of 1884 kms. of National Highways, 33 kms. of State Highways, 1098 kms. of Major District Roads, 1898 kms. of other District Roads, 4997 kms. of Panchayat Union Roads and 3273 kms. of Panchayat Roads[1]. There are 274 kms. of railway lines in the district[2]. The North Eastern broadgauge line from Madras to Calcutta and Delhi passes through the taluks of Saidapet and Ponneri. The Northwest and Southeast broadgauge line, from Madras to Udhagamandalam, Bangalore and to Westcoast run through the taluks of Saidapet, Sriperumbudur and Tiruvallur. The main line towards South i.e., to Madurai, Tirunelveli, Trivandrum and Toothukudi runs through the taluks of Saidapet, Chengalpattu and Madurantagam. A branch metregauge line connects Chengalpattu with Arakonam passing through Chengalpattu and Kancheepuram taluks. A suburban railway from Madras Central to Arakonam is being operated, and another line of the same kind is also being operated between Madras and Gummidipoondi. A Metregauge (electric) suburban service operates between Tambaram (Saidapet taluk) to Madras Beach. This has recently been extended upto Chengalpattu. Save Sriperumbudur, all the taluk headquarters in the district are connected by Railway[3].

The Civil Aerodrome at Meenambakkam is the Airport for Madras and situates in this district. 'Thirusulam' railway station recently opened connects the Airport. The Buckingham Canal which traverses the district from North to South and Marakkanam in the South serves as an Inland water way. In Madurantagam, Saidapet and Ponneri taluks, it is used for transporting merchandise in small boats to and from the city of Madras[4].

The district has 594 post offices, of which seven are head post offices, 270 branch post offices, 215 sub-post offices and 102 extra departmental branches. Telegraph facilities exist in 35 post offices. There are 2,323 telephone connections[5].

Ancient Roads and Highways

In Fahien's account, mention has been made about the roads in Chengalpattu district. This account which was made in 1845, may be the earliest mention of the roads in the district. Fahien's records provide even the minutest details of the route, and locations of the places he visited. Albeit he did not pay any visit to South India, he has made reference to Kancheepuram, which was then the Capital of Tondaimandalam and stated

that it was well linked by roads to the north as far as Prathisthana, the Capital town of Satavahana Empire. A route was described as existed from Kancheepuram to Madurai which was the Capital of Pandyas. Another route is said to have penetrated into the North-East along the sea coast to Masulipattnam from Kancheepuram. In Kancheepuram Pratisthana, Northern Highway was the main route in Deccan which further extended to Ujjain, the seat of the Viceroy of the Province of Avanthi. The Southern Highway ran from Varanasi to Rameswaram and to Cape Comorin. Kancheepuram was on the highways that linked Rameswaram and Cape Comorin with the North.

The travelogue of Hiuen-Tsang, another Chinese Traveller who paid visit to India during the first part of the 7th Century B.C., when Harsha in the North and Pallavas in the South were reigning, leaves a vivid account of the ancient highways in the district. As accounted by him, the major routes of these periods were almost the same as they were during the earlier centuries. The major routes when formed underwent little change with the passage of time. From Hiuen Tsang's account it is evident that the roads during that time were maintained in good condition and were safe. Pilgrims were able to move about freely all over the country.

Carts and pack animals were the mode of goods transport. Up country merchandise was carried in carts, on the heads or shoulders of men kavadis and on the back of animals[6]. Passengers travelled by carts, palanquins or horse backs depending upon their purse and status. The poor travelled by carts loaded with goods on transit. East India Company introduced the horse drawn carriage. Spear remarks

> *You cannot feed large scale industry or distribute mass produced product by bullock wagons or hitch modern industry to a camel. The East India Company's first enabling measure was, therefore, to improve the means of transport. Steam navigation was introduced on the rivers. The next measure was provision of good roads*[7].

The present mode of transport of goods in villages are through bullock carts. Fast moving transport such as vans, lorries are also not uncommon. These are, nonetheless used fully for long distance transpotation. Human transportation is through buses; quite a large number of villagers use bicycles as their means of conveyance. In the recent past, motor cycles and scooters have made their entry on the roads. Motor car is, however, the mode of transport of the affluents.

History of Road Development in the District

The East India Company took great interest in building roads primarily with the intention of facilitating easy movement of troops. The transit duties, on goods carried over roads, were abolished during the Company's administration and this resulted in the improvement of communications.

For this purpose, the territories of East India Company were divided into three divisions in 1819, and each division was placed under the charge of a Civil Engineer[8]. The total road construction in the Presidency was placed under the Inspector-General of Civil Estimates. Later, this scheme became the nucleus of the Maramath Department which was brought under the control of the Board of Revenue in 1825. In 1836, the post of Inspector-General of Civil Estimates was abolished and a Public Works Engineer-Secretary to the Board of Revenue was appointed. As the workload increased heavily, the Presidency was divided into eight Maramath divisions in 1838 and each division was placed under a Civil Engineer. In 1845, the main lines of roads, *viz.*,the Imperial roads, were kept under the care of a Civil Engineer and were transferred to the newly created *Trunk Road Department* which was headed by the Superintendent of Roads. The Civil Engineer's work was restricted to designing and planning of projects. Actually, the Revenue Maramath Department which worked under the orders of Tahsildar, only executed the road construction work. This department consisted of 12 Superintendents of Maramath or Maistries assisted by a number of taluk Maistries[9].

The Engineering Department started in 1785, had jurisdiction over roads and other means of communications on the Cantonments. Till the abolition of this department in 1858, this system remained in force.

The Maramath Department, the Board of Revenue and the Engineering Department of the Military Board shared the work of improving and maintaining the communications of the Presidency until 1858. During this period these departments constructed good roads. A road from St. Thomas Mount to Poonamallee was constructed in 1854, and one from Koratur to Tiruvallur was constructed in the same year. Next year, roads between Tiruvallur and Ennore and Chunambet and Tindivanam were constructed. In addition to these, the cross road from Chengalpattu to Kancheepuram, road from Kancheepuram to the Western Highway, road from Saidapet to Poonamallee and cross road from Southern Trunk road to Pallavaram post office, the Major Trunk Road from Madras to Tiruchirappalli passing through Pallavaram and Chengalpattu were constructed during this period[10].

In 1850, the importance of the systematic management and execution of the Public Works throughout the Presidency had attracted the attention of the Court of Directors in England and, therefore, a Public Works Commission was appointed under their orders, in 1851. The Commission reviewed the working of the Maramath Department, Board of Revenue, the Trunk Road Department and the Engineering Department and submitted its report in 1852. The Commission felt that where public works were scattered over a very large area of country as in the Madras Presidency, it was bad economy to have three separate establishments for the management of different classes of work and recommended the establishment of one department for

the management of all public works, civil or military. After a long deliberation over a period of four years (1853-57), the Public Works Department was finally sanctioned in the year 1858, for the purpose of supervision and execution of works. The department was headed by a Chief Engineer under whose control there were three Inspecting Engineers, 20 District Engineers, 78 Executive and Assistant Engineers, 204 Upper Subordinates, composed of Sub-Engineers, Supervisors and Overseers and 714 lower subordinates or Sub-Overseers. But it was felt that no material improvement could be effected in the means of communication unless fresh taxes were levied. As a consequence of mutiny, the department received only a meagre grant from the government.

In 1886, the District Road Cess Act was passed by which a Cess not exceeding half an anna in the rupee on the rent value of land occupied was imposed so as to form a fund for the construction and maintenance of district roads. The Local Fund Act of 1871 which succeeded the District Roads Cess Act of 1866, transferred the Road Cess Funds raised by the 1864 Act to the Local Fund Board and authorised the local bodies to levy a Cess, similar to that of the Disstrict Board but with a maximum of one anna in a rupee, and to introudce the system of tolls on roads. The tolls and two thirds of the Cess were earmarked for road development.

The road communications of the Presidency were also entirely under the Local Fund Boards which provided for the maintenance and construction of roads from their own revenues. The main source of income was through land cess. In the year 1882-83, the entire State was divided into 30 Local Fund Engineering Circles. Three important highways *viz.*, the Great Northern Trunk Road from Madras to Calcutta, the Great Southern Trunk Road from Madras to Travancore Frontier, the Great Western Trunk Road from Madras to Calicut passed through this district[11].

The Local Boards Act 1884, empowered the local bodies to spend not less than half the income from their land cess upon roads. Since this could not be put into effective use, it was withdrawn in 1900 and the government started granting the local bodies 26 per cent of their land cess for the improvement of roads in addition to the amount allotted to them from the Imperial Grant. Besides, special grants were sanctioned for building bridges and for the construction of roads. The Superintending Engineer of the Public Works Department was placed in charge of the Trunk Roads and the Collectors were entrusted with the maintenance of second class roads. By passing the Madras Motor Vehicle Taxation Act in the year 1930-31, the system of tolls on roads was abolished[12]. The loss was compensated by the Local Boards. Consequently, the merchants found it cheaper and easier to transport produces by road rather than by rail. This resulted in the increase of road traffic considerably in the district.

The Madras Government contemplated a comprehensive road development programme in 1933. A.Vipan was appointed as Special Officer for this purpose. He submitted his Report in 1935. At that time, Chengalpattu district had 1281 miles of roads of which 887 miles were motorable and the following three major trunk roads were running through the district[13].

The Great Northern Trunk Road	-	28 miles (45 km)
The Great Southern Trunk Road	-	55 miles (88 km)
The Madras Bombay Trunk Road	-	50 miles (80 km)

Vipan pointed out that there was a mile of road for every 2.41 sq.miles of the area of the district which was more than the Presidency average of 4.41. He stressed the need for improving roads and other communication means around Madras, since there was continuous transport movement to the pilgrim centres in the district like Kancheepuram, Chengalpattu, etc. A list of roads as under use in 1935 is furnished in *Appendix-1.*

It was felt throughout the Nation to have better and more roads. As a consequence, a conference of Chief Engineers was convened at Nagpur in 1943. A Five Year Post-War Development Plan for the construction of new National Highways, Provinical Highways, Major District Roads and Village Roads was formulated. In Madras, a Special Officer, H.R. Dogra, was appointed to review road development and he submitted his report in 1945. It is on his suggestion that the Highways Department was created in the year 1946. A number of roads hitherto maintained by local bodies were taken charge by the government. The three trunk roads mentioned earlier, which pass through the district, were also taken charge.

Besides these, 16 roads classified as important marketing roads and 25 roads classified as second class roads were also taken over by government. The names of these roads are given in *Appendix-2.*

Mileage of roads in the district at the beginning of 1951 and 1961 is given in the Table below:

Classification of roads	*At the beginning of*	
	1951	*1961*
	(in miles)	
1. National Highways	133	133
2. Major District Roads	580	645
3. Other District Roads	279	416
4. Village Roads	591	624
Total	1583	1818

Important Roads

Kodambakkam-Sriperumbudur Road

This road starts from Kodambakkam proper and joins with the Great Western Trunk Road (i.e. NH-4), connects many important places and agricultural centres, On either side of this road could be found a number of industries and cinema studios near Kodambakkam. The road stretches through a well developed area.

Saidapet-Medavakkam Road

This road connects Saidapet with Medavakkam and passes through highly populated areas such as St.Thomas Mount, Alandur, Madippakkam, etc. Many city buses ply through this route.

Korattur-Thinnanur-Periyapalayam Road

This road branches off at Korattur on Thirumazhisai-Sathyavedu road, joins with Kortalyar Bridge in Puttur Road near Periapalayam. It is an important road in the season of Periyapalayam Festival in the month of Adi every year. A large number of people, besides those who surround the temple, coming both from far off places in North Arcot, Chengalpattu and, South Arcot districts and from Madras city, make the festival crowded and very popular.

Madras-Tiruvallur Road

The road originates at Madras city limit, (the point of origin being Muthusamy Iyer Bridge) has its end at Tiruvallur. It connects several places which are agricultural centres, and industrial centres such as Ambattur, Avadi, etc., and is the shortest route to Tirupathi and Tiruttani. Tiruvallur is the headquarters of the taluk of the same name, which has a very famous Vaishnava temple, Sri Veeraraghava Perumal.

Madras-Mahabalipuram Road

Starting from Madras, this road ends at Mahabalipuram, connecting enroute several business and fishing centres. Mahabalipuram is a very famous tourist centre lying on the seashore. Tirupporur which is one of the important pilgrim centres situates in the middle, between Madras and Mahabalipuram.

Mount-Poonamallee Road

This road running from St. Thomas Mount abuts the Great Western Trunk Road at 12/1, Poonamalle. It has a length of 11 km. of which about 5 kilometres from St. Thomas Mount to Porur on either side of the road, can boast of having several big industries. Just after Porur on the road, is situated the Ramachandra Medical College and TAMARAI (Tamil Nadu Arasu Medical Science and Research Institute). Agricultural strips on either side of the road are fast disappearing to give room for residential and industrial houses.

Road to Pulicat

This is the only road to Pulicat which branches off from Great Northern Trunk Road and ends at Pulicat which is a famous centre for fishing.

Red Hills - Tiruvallur Road

The Red Hills-Tiruvallur road branches off from Great Northern Trunk Road at Red Hills and ends at Tiruvallur connecting enroute several villages and agricultural centres.

Tambaram-Mudichur Road

This road branches off from Great Southern Trunk Road at Tambaram and joins the Vandalur-Walajabad road near Mannivakkam. This is a cross road to Great Southern Trunk Road and Vandalur-Wallajabad road and could serve as a short route to Madras.

A road to Tiruttani starts from Tiruvallur and ends at Tiruttani - both are important pilgrim centres. This is supposed to be the shortest route to connect these two centres.

Besides these roads, the Tirumazhi-Satyavedu road, the Washermenpet level crossing road, the Wallajabad-Keelacheri road, the Arakkonam-Renigunta road, the Chithoor-Tiruttani Road, the Nagari-Pallipet Road and the R.K.Pet-Pallipet road, are the other important roads which need mention here.

The second 1961-81 Road Development Plan included ambitious proposals to improve communication in order to facilitate improvements in the sphere of agriculture, industry, defence, tourism and trade. The need to connect the rural areas was given primary importance the necessity to link our ports of shipping with the cities. The importance to improve the road structure to enable more pilgrims to visit the State was felt and considered as the prime objective. It is thus, the second Road Deverlopment Plan was perceived.

In this 20 Years' Plan Period, 35 miles 2 furlongs of MDR and 13 miles 6 furlongs of Village Roads were improved to National Highways standard.

Administration of Roads at Present

To improve the network of road system a comprehensive post war road development programme proposal came into operation in 1946 with the formation of the Highways Department. A separate Highways Department was constituted in April 1946 and was reorganised with effect from 1st February 1947 to effect economy and to minimize overlaping jurisdictions under two sets of officers and subordinates under Government and District Boards. After reorganisation, each Divisional Engineer had jurisdiction over a revenue district, except a few bigger districts which had two divisions; then the District Board ceased to have a separate staff of their own and the works of both the Government and District Boards were attended to by the same

staff, the charges being borne by them in proportion to the cost of works executed[14]. The first Five Year Plan from 1951 to 1956, the second Five Year Plan from 1956 to 1961 and the third from 1961-1966, the three annual plans for 1966-67, 1967-68, 1968-69 and the subsequent IV, V, VI and VII Five Year Plans contributed to the development of roads to a large extent. The roads were classified as National Highways, State Highways, Major District Roads and Village Roads. These roads were maintained either from State Funds or from the erstwhile District Boards origninally[15]. After the formation of the Panchayat Union, i.e. from 1961, the erstwhile District Board Roads or District Roads and Village Roads were classified as Panchayat Union Roads and Panchayat Roads respectively and relegated to the maintenance of Panchayat Unions and Panchayats. The district has now a length of 658.560 km. of Panchayat and 3719.910 km. of Panchayat Union Roads[15] as shown in *Appendices-3* and *4* respectively.

The 1951 Census figure shows 1583 miles of roads in the district consisting of 133 miles of National Highways, 580 miles of Major District Roads, 279 miles of Other District Roads and 591 miles of Village Roads. Though the Major Roads were maintained in good order, the village roads were earthern roads and deteriorated during fair weather. A large number of villages with a population of more than 500 lacked proper road communications. However, the requirements were provided for in the Five Year Programme[16].

According to the 1961 Census, there were 1818 miles of roads in the district. It consisted of 133 miles of National Highways, 1061 miles of District Roads, and 624 miles of Village Roads. A large number of villages especially those in Tiruttani taluk lacked proper road communications. During the 10 years between 1951-60, the mileage of Village Roads increased only by 33. There were no State Highways in the district. During the I and II Plan Periods, 16 bridges were constructed, The bridge across the Palar river on the Grand Southern Trunk Road near Chengalpattu was constructed at a cost of Rs.26 lakh during the First Plan Period. It is the first and the longest bridge built with prestressed concrete in the whole of India[17].

At present, the district has a total government roads to a length of 3681 km and 8270 km. of Panchayat Roads falling under different classifications as detailed below[18]:

Classification of Roads

Category	Classification-wise				Surface-wise				
	Single lane	*Double lane*	*Multi-lane*	*Total*	*C.C.*	*EB.T*	*WBM*	*Un-me-tta lled*	*To-tal*
1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*
National Highways	-	212.5	-	212.5	-	212.5	-	-	212.5
National Highways-4 Madras-Chittoor-Bangalore Road km.10/2 to 86/2	-			76.00 km.					
National Highways-5 Madras-Culcutta Road 8/6 to 52/8	-			42.20 km.					
National Highways-45 Madras-Tiruchy-Dindigul Road-11/7 - 104/0				92.30 km.					
Total				212.50 km.					
State Highways	-	31	13	44	-	44	-	-	44
Major District Roads	605	477	-	1082	-	1082	-	-	1082
Chithor District Roads	2249	93	-	2342	2	2217	122.5	2	2342
Total	2854	813.5	13	3680.5	2	3555.5	122.5	2	3680.5
Panchayat Union Roads	4997	-	-	4997	-	345	2366	2286	4997
Panchayat Roads	3273	-	-	3273	-	45	1035	2193	3273
Total	8270	-	-	8270	-	390	3401	4479	8270

Another noteworthy road in the East Coast which is proposed to run almost parallel to Bay of Bengal on East Coast from Madras up to Kanniyakumari to a total length of 737 km. With the assistance of the Asian Development Bank, this road is being upgraded to the standard of National Highways from o/o to 161/o up to Cuddalore, of which 81 km. run through Chengalpattu district.

After the creation of Highways Department in 1946, there was a steady increase in the formation and maintenance of highway roads. Hence, a new wing *National Highways* was created in 1971 for maintaining and improving only National Highway roads in Tamil Nadu are wholly financed by Government of India. At present, this National Highways wing under the Tamil Nadu Highways and Rural Works Department, consists of one Chief Engineer, 4 Superintending Engineers, 2 Deputy Chief Engineers, and 18 Divisional Engineers for the entire State. Chengalpattu District comes under the control of the Superintedning Engineer (National Highways), Madras, and Divisional Engineer (National Highways), Madras.

Bridges

In the early times, smooth movement of traffic was hindered by a number of unbridged streams that intersected the roads at several places. During monsoons, they were in torrents and in summer, they were treacherous sand heaps. In both ways hindrance to traffic was created. To overcome this, bridges and culverts were constructed. Several of these bridges were constructed during the Five Year Plan Periods especially during First and Second Five Year Plans when 16 bridges were constructed. The important old time bridges were those on the Palar and the Arni rivers. At present,there are 58 bridges in the district, a list of which is provided in *Appendix-5.*

Railways

The development of Railway lines in Chengalpattu district should be related to the establishment of the railway line between Madras and Nagapattinam in the year 1861 which was the first railway line ever laid by the South Indian Railway Company. This broad gauge line connected the Port of Nagapattinam with Thanjavur. This line was extended upto Tiruchirappalli Fort in 1862 and again in 1864 upto Erode[19].

The South Indian Railway Company laid a branch line in May 1867 between Arakkonam and Kancheepuram[20], covering a distance of about 64 km. This line was, however, in March 1870, made over to the Carnatic Railway Company which was authorised to make such extensions as might find necessary. A further contract of the same date providing for the alteration of the gauge from 3'6" to metre gauge and to extend the line from Kancheepuram to Cuddalore was given to the Company. In December 1873,

the Great Southern India Company was amalgamated with the Carnatic Railway Company under the title *South Indian Railway Company* and the extension of line from Thanjavur to Madras running through Chengalpattu was provided for. This extension of line was opened in July 1879.

In 1881, another branch from Little Kancheepuram to Chengalpattu was opened for traffic. By this extension, from Tiruchirappalli to Toothukudi and from Thanjavur to Madras, Chengalpattu district was connected with the city of Madras in the North and with Thanjavur, Tiruchirappalli and Madurai in the South. This line is of a length of 716 km.

The line upto Madurai was later extended to Manamadurai, Mandapam and Dhanushkodi in the East and towards the Trivandrum physically. The extension enabled the railway authorities to introduce a new train *viz.*, Boat Mail between Madras and Dhanushkodi which passed through this district covering a distance of 734 km. It 'provided a connection to the Steamer from Dhanushkodi to Talaimannar in (Ceylon) Srilanka which was named Indo-Ceylon Express. Another train known as Trivandrum Express which was a through train from Madras Egmore to Trivandrum Central was also introduced, covering a distance of 889 km.

The section from Madras to Tindivanam covering a distance of 120 km. was operned on 1 September 1876 and the section from Chengalpattu to Walajabad covering a distance of 22 km. was opened on 1 August 1880 and the Walajabad-Arakkonam - Kancheepuram-Arakkonam line for a distance of 28 km. was opened in 1865.

The Thiruvottiyur-Gummidipoondi section covering a distance of 38.27 km. on the suburban areas of the Madras-Calcutta Trunk route was doubled to ease out the heavy traffic. The completion of which facilitated easy and speedy movements of trains. Thus, it could serve a large number of industrial workers whose mobility was necessitated on account of springing up of a number of industries around that area.

Starting of Electric Trains

The later half of the 19th Century witnessed the introduction of a new system in railways, *viz.*, the use of electrical power system which marked the dawn of a new era. The first ever electric track was laid down in 1925 between Bombay and Kurla, a distance of 16 km., as the first stage in the electrification of the suburban section Bombay to Kalyan. The metre gauge track between Madras Beach and Tambaram was laid in 1930 covering a distance of 29 km. and commissioned for suburban traffic. This electrification was later extended upto Villupuram and the sub-urban service has at present been extended upto Chengalpattu. The track is energised by 1500 volt direct current power supply. This line passes through the towns of St.Thomas Mount, Meenambakkam, Pallavaram, Chrompet and Tambaram.

The electric line on the broadgauge line has been laid between Madras Central and Jolarpet on the Madras-Coimbatore line, the last station in Chengalpattu district on this line being Tiruvallur and between Madras Central and Elavur the line was electrified in 1979. Introduction of Madras-Tiruvallur and Madras-Gummidipoondi suburban sections, since 1979 and further extension of EMU Services to Tiruttani has changed the life style of the people of the district[21].

Marketing the First Inter State Electrified Multiple Unit service, the Broad Gauge suburban trains of Southern Railway now reach upto Sulurpeta in the neighbouring State of Andhra Pradesh. For the benefit of commuters in the Madras suburban area, one pair of EMU trains in the morning and one pair in the evening are run in the South-West and North-West lines Tiruvallur-Ennore-Tiruvallur, *via* Vyasarpadi bypass line, thus providing a change over at Basin Bridge.

Six BG EMU trains are extended and two new trains are introduced on the Madras Beach - Madras Park sections of MRTS from September 16, 1991. The Madras-Beach Kancheepuram passenger train has been given a stoppage at Maraimalainagar for the residents of the area.

When the former Madras Guaranteed Railway Company's contract expired on the 31st December 1907, lines owned by that Company were purchased by the Secretary of State for India, and on the 1st January, the erstwhile Madras Railway with the exception of the Jolarpet-Mangalore Section together with the 3'-33/8" Metre-Gauge Sections of the South Indian Railway from Katpadi to Guntur and Pakala to Dharmavaram made over to the Southern Mahratta Railway Company for working and the enlarged company was styled the Madras and Southern Mahratta Railway Company. The following lines in Chengalpattu district were under the control of the Company : Vyasarpadi junction to Perambur (opened on 7 February 1874 for a distance of 2.08 km) Perambur to Avadi (opened on 1 May 1877 covering a distance of 15.26 km), between Avadi to Tiruvallur (opened on 20th July 1877 covering a distance of 20.62 km) and Tiruvallur to Arakonam[22] (opened on 20th August 1877 to a distance of 26.43 km).

In the year 1929, a chord line from Villupuram to Tiruchirappalli (*via.* Vridhachalam and Ariyalur) and in the year 1930, another from Tiruchirappalli to Manamadurai (*via.* Karaikudi) were constructed. The line from Tiruchirappalli junction to Erode (*via.* Karur) was converted into a Broad Gauge line in 1929 to facilitate through travel between Tiruchirappalli and far off stations on the Broad Gauge line. Consequent on the expansion of railway line, the railway workshop at Nagapattinam was shifted to Tiruchirappalli in 1927.

The railway lines were taken over by the Government of India, from the private companies in the year 1944. In 1951, the three railway lines in

the South, *viz.*, the Madras Southern Maharatta, the Mysore State and the South Indian Railways were integrated and to be called the Southern Railway, and had headquarters at Madras.

The names of Trains which pass through the district are given in *Appendix-6.*

Post and Telegraphs

Prior to 1837, there was no organised postal system in Chengalpattu district as it was the case with other districts. A few wealthy persons employed private messengers to carry tapals. Only after the establishment of East India Company could a postal system be introduced. Due to necessity, to have its own communication conveyed to places, when it usurped administrative powers, the company felt the need for a postal system on July 24, 1837.

Origin of Post Offices

Messages were sent by hand through emisseries or by oral[23]. The Jatakas refer to a female, carrier birds employed for conveying messages. It is stated that Chandra Gupta Maurya created a State Postal Service of Messengers. Postal stations were established along the royal highways from Pataliputra to the outlying borders of the empire. Pigeons, as message carriers were commonly used[24]. Bankers had their own arrangements for sending *Bills of Exchange* between important places of the *Mahajandak* of the 17th and 18th Centuries[25].

The Muslim Sultans had their own system of postal arrangements. Ala-ud-din Khlji, for example, is said to have begun the system of *dak-runners* i.e. Postal Stations. Ibn Batuta, the Arab Traveller, who came to India in 1333, states that there were two postal systems run by the State - a horsepost, a system in which horses were stationed at every 6.4 km. where three runners waited each, with a rod with bells, the sound of which would alert his counterpart at the next station[26]. The other, the foot post, was quicker than the horsepost. Runners, in relays, also brought fruits in baskets and even was carried by them when they return after delivering the post.

On July 24, 1837 the government assumed the exclusive right of conveying post for a fixed charge, enacting a law. However, there was no coordinated head to control the department as a whole. The local Post Master Generals who were also Postmasters of Presidency towns, and the Collectors who were responsible for the post offices in the district managed the department. The dawks consisted of a few main line of runners connceting the principal towns in the district with the headquarters. At that time of the delivery of posts, a small fee was collected. On delivery, the postman obtained the signature of the addressee which was listed. A record to register the

names of the addressees on all articles was maintained. The postal rates differed according to the places and distances. But in 1854, a uniform postal rate, irrespective of the distance and place, and also the system of postal stamps for postage was introduced for the first time. A post of Director-General of Post Offices was created to have control over all post offices in India[27].

Another Postal System known as the District Post in vogue prior to 1854, was meant to carry official posts between the Collector, Magistrate, and their subordinate officers. The dawks were carried by peons and other servants belonging to the revenue establishment. There were no receipts and no separate charges in the accounts. District Post was opened to the public in 1846. Separate principles were followed in governing the Imperial Post and District Post.

The peons and village servants belonging to the revenue establishment were used for carrying the dawks. By an order, the government opened the district post for the public on payment of postage in cash. The agency continued the same, and the district postage, regulated on a different principle from the post rates of the ordinary postal department, and furnished a fund credited to the district in which it was raised. A letter which passed on from the regular post to the district post for delivery in a village where there was no regular post office, was charged district rate, in addition to the regular postage and *vice-versa.* Inter communication between these two posts did not exist. With the introduction of postage stamps in lieu of cash payments in regular postal department, the distinction between ordinary regular post and district post vanished and the two were continued to form one system for the public convenience. From 1854, the district post, it could be said, was converted into a feeder of the Imperial post[28]. In places where there were no regular post offices, the district post set up its office and levied a surcharge, besides the postage paid to the regular post. Except this, no other financial connection existed between these two systems. The district post was also not treated as a source of revenue. Instead, the Collector of the district was authorised to utilise the money raised through district post for its own improvement. The district post office was connected with the taluk post offices which were located in the respective taluk headquarters. The Peons of district post offices were employed to cary the posts between these two offices.

The delivery into outlying villages was covered by a system known as Rural Delivery, which system consisted of a staff of Itinerating Peons whose beats were so arranged that they should visit each village in the taluk once, twice or thrice a week or daily, according to the importance of the village, its accessibility and the funds available. The administration of the District Post was in the hands of the Revenue Department[29].

The Indian Postal Act XVII of 1854 introduced a uniform rate of letter postage irrespective of distance. It placed all the post offices in India under the management of a Director-General. In 1866, this Act was repealed and a more elaborate Act, brought into force, which regulated the system of management of the department, the levying of postal charges, etc. Post Cards were introudced in 1879, the system of V.P.P. in 1877 and Insurance in 1878. The introduction of Money Order was made in 1880 and Postal Savings Bank in 1882. In the year 1882, the Chengalpattu postal system consisted of 22 letter boxes, 32 village posts and 7 runners[30]. During the first half of the 20th century, several more post offices were established in the district and a constant development was made in the postal establishment. The Census figures, after independence for 1951 show a total of 235 branch post offices[31], 16 non-combined sub-post offices, 1 post and telegraph head post office and 21 post and telegraph sub offices in the district. The respective figures for 1961 is 235, 16, 2, and 47[32]. According to the 1971 census, there were 484 post offices and 16 post and telegraph offices in the district[33].

Prior to November 1, 1972, there was only one Postal Division but on the above date the Kancheepuram Postal Division was formed bifurcating composite Chengalpattu Postal Divison with headquarters at Kancheepuram.

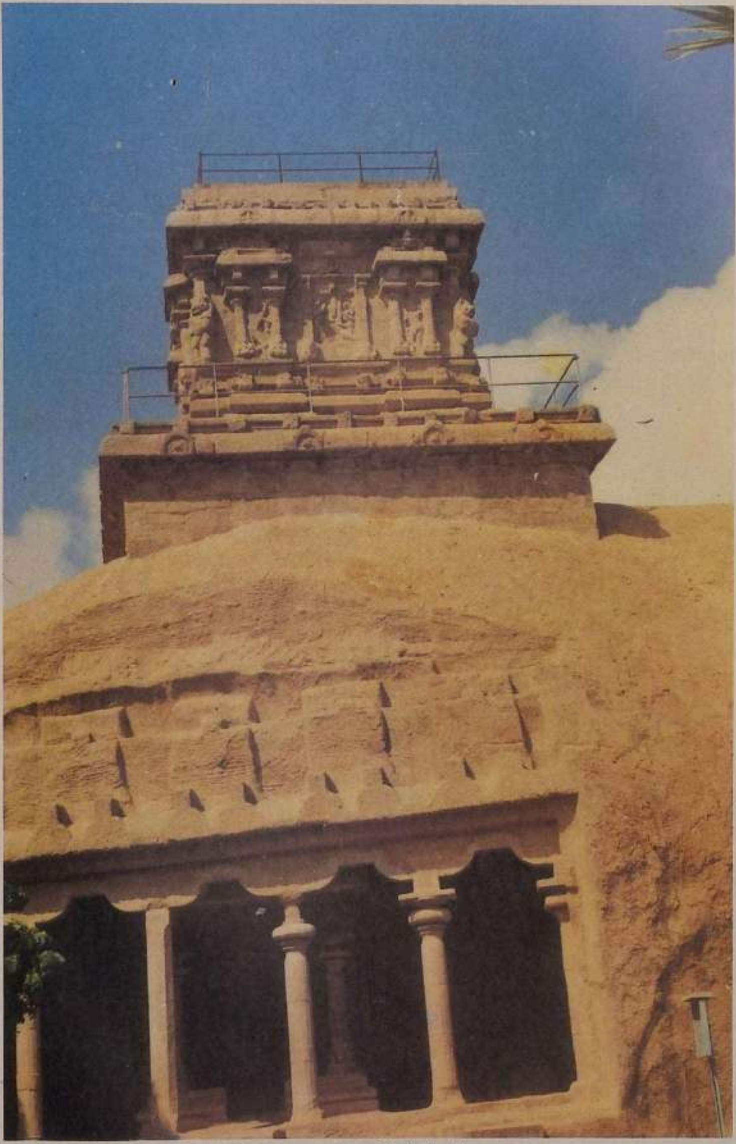
At present, the district is served by three postal divisions but some areas adjoining city areas in Chengalpattu revenue district is served by Madras city South Division at Nungambakkam. The three Divisions are (i) Kancheepuram Division at Kancheepuram, Chengalpattu Division at Chengalpattu and Tambaram Division at Tambaram. The district is served by seven Head Offices (HO), 217 Departmental Sub-Offices (DSO), and 16 Extra Departmental Sub Offices (ED 50)[34]. A detailed list of Classified post offices is provided in *Appendix-7.*

Speed post service meant for delivering letters within 24 or 48 hours covering 37 cities in India, and within limited days in 29 foreign countries has been introduced in selected post offices. Speed Post Money Order has also been introduced with effect from 13 May 1988. There are 16 combined offices (sos) having Morse Circuit as shown below[35]:

1. Acharapakkam, 2. Cheyyar, 3. Chunampet, 4. Guduvancheri, 5. Kalpakkam, 6. Karunguzhi, 7. Kattankulathur, 8. Madurantakam, 9. Mamallapuram, 10. Maraimalainagar, 11. Natham-Chengalpattu, 12. Padalam, 13. Polambakkam, 14. Singaperumalkoil, 15. Thirukalukundram and 16. Thirupporur.

The following 16 offices have Phonogram facility :

1. Alagesanagar, 2. Athur, 3. Chengalpattu Medical College, 4. Elappakkam, 5. Kuvathur, 6. Kaddapakkam, 7. Madurantakam East, 8. Manambathi, 9. Orakkattupettai, 10. Orathi, 11. Pavunjur, 12. Ponvilainthakalathur, 13. Pudupattinam Colony, 14.Salavakkam, 15. Thozhupedu and 16. Vedanthangal



Old light house - Mahabalipuram

Tele Communication Facilities

The district has been provided with a well knit telecom network. In the whole of the district there are three Telegraph Sub-Divisions and there is one Telephone Sub-Division. The district has working telephone connections of 9345. The district is served by eight National Telex Exchanges, *viz.,* Gummidipoondi, Maraimalai Nagar, Chengalpattu, Kancheepuram, Sriperumpudur, Guduvancheri, Kelambakkam and Thiruvothiyur. It has eight Trunk Exchanges, one each at Kancheepuram, Chengalpattu, Tiruttani, Madurantakam, Mahabalipuram, Sriperumbudur, Ponneri and Tiruvallur. Facilities for Group Dialing, Inter Dialing and Public Telephone facilities are available in the Telephone Exchanges. STD and FAX network facilities are available at the Exchanges *viz.,* Chengalpattu, Kancheepuram, Mahabalipuram, Tiruttani, Kalpakkam, Tiruvellore, Ponneri, Madurantagam and Gummidipoondi. Details of Exchanges, their capacity, name of routes having Group Dialing facility, etc. are given in *Appendix-8* [36].

Rest Houses and Travellers' Bungalows

The social life of the Tamils brings on the horizon the fact that there were no paucity of places to stay for travellers since the Kings, who, had great concern for the welfare of the travellers maintained several choultries at particular intervals on highways. This is more so in places which were pilgrim centres and places of interest and historical importance. On this anology, this district also had a number of such choultries and rest-houses. An Act passed in the year 1871 transferred many of these to the Local Fund Boards which took credit for establishing many new choultries since the introduction of this Act. At present, Municipalities also, besides the Highway and Public Works Departments maintain several rest houses, the details of which are furnished below:

"The Highways and Rural Works Department maintains Travellers' Bungalows at Guduvancheri, Gummidipoondi, Periapalayam, Melapalayam and Acharapakkam. It maintains Two Rest Houses, one at Avadi and another at Thenpakkam"[37].

The Municipalities of this district maintain four Tourist Bungalows, one at Tiruttani, one at Chengalpattu and two at Kancheepuram.'

Light Houses

In this district, there are two important light houses, the Mahabalipuram Light House and the Pulicat Light House, details of which are given below[38]:

Mahabalipuram Light House

This Lighthouse is situated at Lat. 12°-36.8' and Longitude 80°-11.5'E about 26 metre high from the base. The circular masonry tower was constructed during the year 1990, and the equipment that is in use now was commissioned in 1940. Optical equipment is of 700 mm. second order with three panels, revolving on mercury float pedestal with a clock work machine.

The equipment revolves at two r.p.m. giving a flash of 0.4 seconds after every 9.6 seconds.

Illuminant is 55 mm. P.V. burner with auto form mantle. In case of an emergency, if the main P.V. burner could not be lighted, a capillary lamp is provided. The main light is having effective beam intensity of 4,40,000 candles and is visible up to 23 nautical miles in average weather conditions. The optical and lighting equipments are housed in 3.65 M. dia. lantern room in the top of the tower.

Pulicat Lighthouse

The Pulicat Lighthouse is situated at Lat. 13°-25'N and Long. 80° 20-E on the island. This is a modern electrically operated Lighthouse 46.8 metres high R.C.C. Hexagonal tower was established in 1986. This Lighthouse has been modernised after replacing old Lighthouse working in P.V. burner with autoform mantle. Lighting Equipment is PRB-21, sealed beam with gearless electric pedestal revolving type, fitted with duplicate drive coils and flux metres, having a speed of rotation 6 r.p.m. It is housed in three M. dis. lantern room. The station is equipped with standby diesel generating sets of 19 HP with an alternator of 12.5K.V.A. rating,230 V single phase. The light is having effective beam intensity of 10,50,000 candles.

Ports

In this district no Port *per se* exists, but it had Ports in Mahabalipuram, Pulicat and Covelong which were in use in the distant past but at present are merely fishing villages.

Mahabalipuram

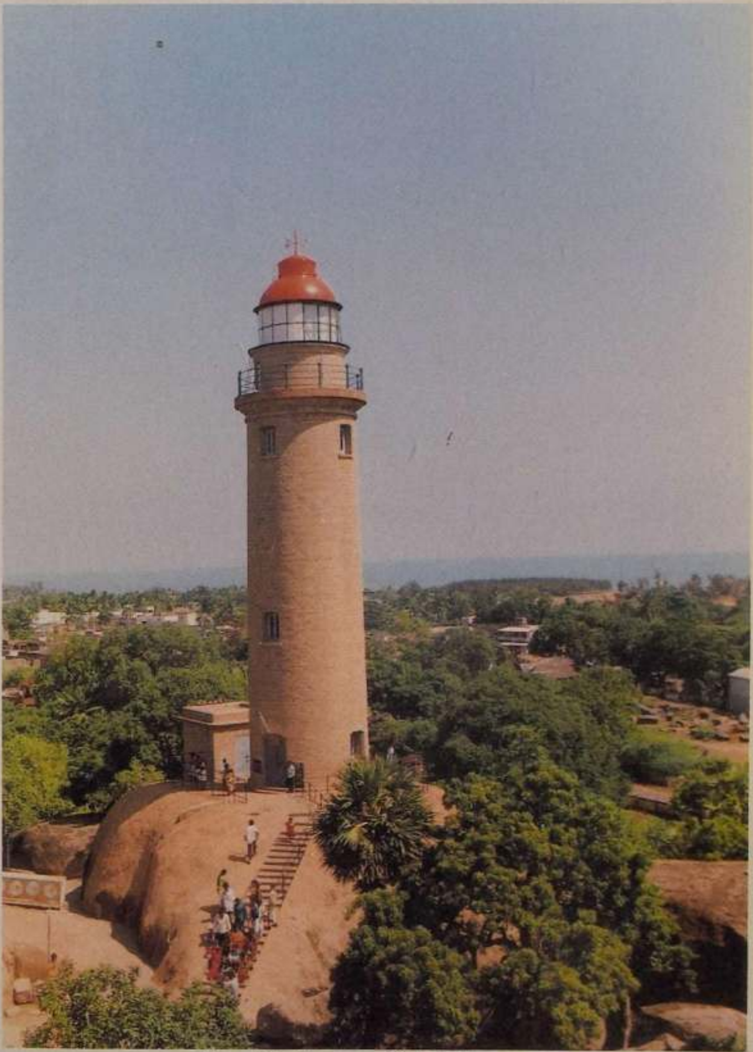
Mahabalipuram, which is otherwise known as Mamallapuram, was from time immemorial, the Chief Port of the Pallavas. According to Pandit M. Raghava Aiyyangar, Mamallapuram was a flourishing Sea Port under another name even at the Sangam period and the harbour was full of ships carrying horses from Western Countries and merchandise from the Northern countries[40]. "Mahabalipuram was also a prosperous seaport in the day of Pallavas. Tirumangai Alwar, the Vaishnava Saint, speaks of *Kalan Agal Iyangum - Mallaikadalmallai,* (Mallai was prosperous owing to the frequent ingress and egress of merchantile vessels)"[39].

Pulicat

This minor Port is the handiwork of the sandbanks which have formed on their projecting point and provided some shelter. Pulicat was, in fact, on the seashore during its heyday, but now, since the sea has receded, it has become an island.

Covelong

Covelong means a headland. Its Sanskrit name was Nityakalyānapura meaning daily marriage city. It was also called "Saudat bunder", or auspicious



New light house - Mahabalipuram

port, so called by Anwaruddin, the first Nawab of Arcot who built a Fort here in 1745., embracing an extent of 486 acres. It situates at a latitude of 12°47', longitude 80°18'. From Chengalpattu, It is at a distance of 32 km. It was one of the earliest settlements and formerly of strategical importance. It is said that the approach from the South to Southeast was dangerous in consequence of a rocky shoal projecting upwards of about two kilometres into the sea in that direction. In ancient times, it was a town of a Cautham (காதம்) *i.e.* 10 miles, including Covelong, Trivandrum and Mavellipore. As given by Mohammedan accounts, it was a great town (shahar) with many suburban adjuncts. Covelong was a Dutch settlement and the Imperial East India Company of Ostend built a Fort which disappeared. It was occupied by the French in 1750 by Strategem. After the surrender of the French Garrison to Clive in 1752, the fortifications were blown up. The ruins now in existence, are said to belong to the Sundar Bunder Fort. The ruined fort and the beautiful beach attract a large number of gathering[41].

Airports

The Chengalpattu District, of which Meenambakkam forming part of Saidapet taluk, is served by the International and the Domestic Air Ports both of which situate at Meenambakkam. Since the number of flights and passenger traffic has considerably increased in the old Airport which operated both Domestic as well as International flights, a new Airport has been constructed.

The Meenambakkam Airport was constructed just before the World War-I and the first Aircraft to land here was in 1918. Due to cessation of war, the Airport in 1920's was not active, as it was constructed perhaps to operate Military Aircrafts. Civil Aviation, however, was started at Madras in 1930's. In 1932, the first Aircraft landed at the Madras Airport - a mail carrier from London. Since then, the Meenambakkam Airport has been operational without any interruption. Ranging from the Trainer Pushpak Aircraft which leisurely drove over the city to occasional touchdowns of majestic supersonic Concordes that traverse the Globe, the Airport is a reliable port of call for many an Aircraft. In 1947, a new terminal building which was the most modern of that time, was constructed. Regular operation started from this building with the private Airline Companies all flying Dakota-DC-3 Aircrafts. The Airlines were nationalised in 1953 and the Indian Airlines Corporation, which was formed, started with DC-3 and DC-4 type Aircrafts. Simultaneously, night Air-Mail was introudced and thus this made the Airport busy even during nights[42].

The Madras Airport was connected by Communication with Delhi, Bombay, Calcutta and all other Airports in Madras region by wireless telegraphs right from fifties. Manual High Frequency Direction Finders and Non-Directional Beacon were the Navigational Aids. There were Airground Wireless Channel besides point to point Wireless Telegreph Channels. Two

VHF Channels and Inter Power Inter Area Radio Telephone Channels were functioning round the clock.

Advancement in technology necessitated the introduction of automatic VHF Direction Finding Units. At the sametime war time model VHF Transmitters and Receivers were replaced. These were again replaced during 1978-80. State Units which continue to work high frequency Radio Telephony Aeromobile Service was introduced with fixed frequency Transmitters and Receivers. Within one year, transmitters with auto tuning facilities were installed and they worked for more than 30 years. Only in eighties, these transmitters were replaced by S.S.B. transmitters.

In 1958, Very High Frequency Omni Directional Radio Range was installed. To this was added the distance measuring equipment in 1969 and both of them functioned till 1987. Now, in their place, Doppler Very High Frequency Omni Range and distance measuring equipment have been installed within the Airport area.

Radar found its place at Madras Airport in 1969, when Decca Radar was installed. A High Power Route Surveillance Radar with a range of 200 nautical miles was installed in 1976. The old Decca Radar was replaced in 1977 with a Terminal Area Radar which has a range of about 100 kilometres. The Instrument Landing System installed in 1968 was replaced by modern equipments in 1977 which still has its service utility value.

*Meenambakkam, the Southern Gateway to the skies, situated in the picturesque backdrop of two hillocks — Tirusulam to its South-West and St.Thomas Mount to its North-East — has many firsts to its credit[43].

The first to have the International and Domestic Terminals located in close proximity to each other and linked with a corridor. Equipped with modern aerobridges for the convenience of the passengers at the domestic terminal. An exclusive suburban Railway Station meant for the Airport, opposite to the Airport Complex with road transport available within walkable distance. Ajudged the Best Airport for domestic terminal and awarded a medal for its architectural design by the President of India.

The first Airport in India which has the distinction of being named after two former Chief Ministers of a State — the Domestic Terminal named after K.Kamaraj and the International Terminal after C.N. Annadurai.

Administrative Set up

Since the formation of Madras Airport, Civil Aviation Department has undergone several changes, especially it was bifurcated twice, once in 1972 and then in the year 1986[44]. The International Airport Authority of India which was formed in 1972, took over the control and administration of the Madras Airport. Runway maintenance, airport administration and fire services passed in to the hands of International Airports Authority of India, while communication and navigational facilities were still maintained by Civil Aviation

Department. National Airport Authority of India was created on 1 June 1986 by transferring properties of Civil Aviation Department and deputing the staff and officers of Aerodrome and Communication Directorates. All the major functions of the old Civil Aviation Department came into their fold. Only regulatory directorates like Airworthiness, Air Safety, etc. were obtained by Civil Aviation Department. As such, office of Senior Air Safety Officer (Pay and Regional and Accounts Officer are the only offices under Civil Aviation Department in Madras. The Bureau of Civil Aviation Security, under the Ministry of Civil Aviation is also located at Madras Airport[45].

At present, Civil Aviation Department, National Airports Authority and International Airports Authority of India are functioning as also the Central Public Works Department, Meteorological Department, Post and Telegraphs and other Departments.

Details of the Airport

The total area of the Airport is 1263.45 acres having an operational area of 736.42 acres and non-operational area of 175.37 acres. The area between operational area and boundary wall is 345.31 acres with an outside area of 6.35 acres.

The authorities provide facilities like drinking water with disposable glasses as a hygienic measure, restaurant- snack bar, banks, post-offices, insurance company, bookshop, medical attendance round the clock, transport facilities (on payment) from the Airport to the city and *vice versa*, Police Assistance Booth to look into the complaints of passengers, railway reservation counter, and hotel reservation counter. The fully air-conditioned Airport, satisfying the modern specifications, has in it the facilities of telephone booths, elevators, excalators, aerobridges, milk bar, and retiring rooms. Mother and infant lobby also exist, where mothers can nurse their babies and it is filled with toys and play materials for children to pass away their time, prepaid taxi service system, STD/ISD facilities and the like. The passengers could also use the free baggage trolleys, the taxi hailer system, and the car rental facility[46].

Facilities to Cargo

An exclusive Cargo Department, with Export and Import Cargo sheds, is functioning which hastens clearance of import, and export cargo. 'Cargo Arrival Intimation Service' is extended to the customers, for speedy clearance of import cargo and also to avoid heavy loss of demurrage charges to the customers. The volume of traffic and cargo is furnished in *Appendix 9.*

Major items of cargo handled in Madras Airport are electronic goods, leather goods, vegetables, machinery parts, handloom goods, medicines, etc.

Modern equipments and latest techniques available in the Airport

Apart from those equipments such as escalators and aerobridges which had already been explained, the airport has automatic sliding doors to facilitate the passengers; the security screening modern X-ray equipments have been fixed to detect explosives or other contraband articles. Modern techniques and equipments adopted here are on par with International Airports of the World. The Aircrafts that are being operated at present are B 747, AB 300, A8 310, B 737/Bornair and DCB for Cargo[47].

The Tirusulam Air Port (formerly Meenambakkam Air Port) now holds a very important position in the Communication and Navigation Map of Civil Aviation in India. Madras Flight Information Region extends from Lakshadeep Island to Andaman, Nicobar Islands. In the North, it is bounded by 18°N Latitude. A 10 Kilowatt high power non-directional Radiobeacon, Instrument Landing System, VHF Omni Directional Radio-Range distance measuring equipment, three Radars, (Precision Approach Radar, Terminal Approach Radar, Route Surveillance Radar) and an automatic VHF Direction Finder with digital display, form the important Navigational Aids. A new technical complex near the National and International Terminal has housed the new Control Tower, Communication Centre, Flight Information Centre, Area Control and Briefing Units.

Madras Airport is now connected by land line, tele typewriter channels to Tiruvanandapuram, Bangalore, Hyderabad, Tiruchirappalli, Bombay, Nagpur, Kualalampur and Colombo. Direct Speech Circuits are available to Delhi, Bombay, Calcutta, Bangalore, Tiruvanandapuram, Hyderabad etc. For communication witl. aircrafts, there are SSB high frequency-Radio Telephony and six very high frequency channels for International and Domestic Flights.

Traffic Statistics

The traffic statistics relating to Madras Airport is provided in *Appendix-10.*

Statistics presented in the *appendix* show an increase in the International Aircraft movement, which is due to cancellation of several Air India Flights. The decrease shown in the Domestic Aircraft Movement is attributed to fall in the scheduled movements by Indian Airlines. Increase in the Domestic Passengers movement, inspite of decrease in the Domestic Aircraft movement, is attributed to higher load factor. The International Cargo which shows a downward trend is attributed to decrease in the Air India freighter movement.

Domestic Services

The domestic air service is taken care of by the Indian Airlines which commenced its operations through Madras from 1 August 1953. The Southern Region of Indian Airlines which came into existence in August 1966, with its headquarters at Madras, is headed by a Regional Director. The region

comprises of 16 stations in Madras, Trichirappalli, Coimbatore and Madurai in Tamil Nadu, Hyderabad, Vizag, Vijayawada and Tirupathi in Andhra Pradesh, Trivandrum, Cochin and Calicut in Kerala, Bangalore and Mysore (Offline) in Karnataka and three foreign stations Malaysia, Colombo and Singapore. While the widebody Airbus Aircraft operates through Madras, Bangalore, Hyderabad, Trivandrum and Singapore, the other stations in South are connected by Boeing 737s and HS 748s. Madras is directly airlinked with all State capitals in South and major cities in India. Computerised reservation facilities are available in 13 stations in Southern Region including all the four stations in Tamil Nadu[48].

The Vayudoot Services are being operated between Madras and Coimbatore, Thanjavur, etc. Recently flight operation has been entrusted with the private companies also. As a result, Air Asiatic Pvt. Ltd. a private company operates its flights, to serve the air passengers.

Sufficient cargo facilities are available on Indian Airlines Air Bus and Boeing Services. From Madras alone, 60 tonnes of cargo capacity is available every day by various flights. The modern cargo complex is put up on a 10 acre land adjoining Meenambakkam. Indian Airlines is one of the largest Regional Airlines in the World which is equipped with a modern fleet of Airbus, Boeing 737, A320 Air Crafts. It offers over 220 services daily and links 67 destinations including 10 stations in the neighbouring Countries of Nepal, Pakistan, Afganistan, Srilanka, Maldives, Thailand, Bangladesh and Singapore. On an average, it operates 16 flights a day[49].

Other Facilities Available

Computerised check-in facilities have been provided at Madras Airport where tele check-in facility is available for executive class passengers who carry only hand baggage on A 300 flights. These passengers may check through telephone within two hours before the departure of the flight, and collect their boarding cards 30 minutes before flight departure. Free check in counters have also been provided to enable passengers to check in at any counter for any flight. An out booking office, where computerised ticketing is done, has been established. Auto answering machines have been installed to provide informations to passengers. Airlines has developed a computerised system known as RAPID, to provide speedy information to passengers over telephone about the extent of delay. Single side band/high frequency radio communication has been provided to communicate with most of the stations[50].

Road Transport

The district, which is well served by a network of roads, serves the people with different kinds of road transport. Many number of buses, private carrier taxis, tourist taxis and autorickshaws help transport people while goods vehicles (public carriers), lorries and tractors help in transporting commodities from anywhere into the district. The number of such vehicles which operate in the district is presented below[51]:

Type of Vehicles	1980	1981	1982	1983	1984	1985
1. (a) Stage Carriages Buses	218	221	225	220	224	219
(b) Goods Vehicles (Public Carrier)	1179	1234	1300	1371	1432	1490
2. (a) Private Carrier	147	164	172	187	191	295
3. Taxis	186	50	22	28	43	77
4. Tourist Taxis	6	6	2	13	30	47
5. Autorickshaws	..	..	5	213	311	438
(b) Vehicles under the control of State & Municipal Authorities	Lorry Tractor	-	121			
	Trailor	-	14			

In this district, the private bus operators operate their buses in 152 routes, the Thanthai Periyar Transport Corporation operates in 123 routes and the Thalapathi Alagiri Transport Corporation operates in 91 routes. The Thanthai Periyar Transport Corporation operates the town bus services in 66 routes, covering the whole of the district.

The Corporations whose buses ply through this district are Cholan Roadways Corporation, Thiruvalluvar Transport Corporation, Thanthai Periyar Transport Corporation, Thalapathi Azhagiri Transport Corporation, Jeeva Transport Corporation, Cheran Transport Corporation, the Nesomony Transport Corporation, the Cholan Roadways Corporation, etc. However, the bulk of the buses are operated by the Pattukottai Azhagiri Corporation, Thanthai Periyar Transport Corporation and Thiruvalluvar Transport Corporation.

Pattukkottai Azhagiri Transport Corporation

The district services operated by the erstwhile Tamil Nadu Transport Department was separated and formed as the district wing of the Pallavan Transport Corporation with effect from 15 September 1975. The area of operation of this Corporation was Chengalpattu district. Routes of this wing and those of Thanthai Periyar Transport Corporation were nationalised and this wing started its operation as an Independent Corporation in the name of Pattukkottai Azhagiri Transport Corpoťation called after Pattukkottai Azhagiri, with headquarters at Vellore from Ist December 1982[52]. The name of Pattukkottai Azhagiri Transport Corporation, has been remaned as Thalapathi

Azhagiri Transport Corporation." It covers the entire area of the district for operation. It has a total fleet strength of 903 of which 273 buses ply in the district. The Corporation has five depots in the district; 71 buses start in other districts and terminate in Chengalpattu district. This Corporation operate its buses in 179 routes touching 133 points, covering a distance of 93,204 kilometres per day. The average number of passengers travel by these buses per day is 2,28,849 deriving a revenue of Rs.4,28,694/-.

Besides the regular route buses, special buses are operated on festival occasions to Tiruttani and Periyapalayam where the Subramaniya Swamy Temple and Bhavani Amman Temple respectively attract a large number of pilgrims[53].

Thanthai Periyar Transport Corporation

This Corporation was formed on the 16th January 1975 with its headquarters at Villupuram. The area of operation of the Corporation is South Arcot and South Chengalpattu districts[54].

The Thanthai Periyar Transport Corporation has a fleet strength of 165 mofussil buses and 99 town buses in Chengalpattu district. The Corporation has constructed a Motel-cum-Bus Station Complex at a cost of Rs.60 lakhs, at Mamandur in Chengalpattu taluk for the comfort of the passengers. The Motel situated on Madras-Trichirappalli NH 45, provides refreshments and other required facilities to passengers and this is a model bus stand in the whole of India[55].

The Cholan Roadways Corporation, Limited, a Government of Tamil Nadu undertaking, operates two buses, through Chengalpattu district, between Madras and Kumbakonam. Enroute, these buses stop at Tambaram and Chengalpattu both of which are in Chengalpattu district[56]. The Thiruvalluvar Transport Corporation ply their 116 route buses through this district[57].

Motor Vehicles Maintenance Department

The Motor Vehicles Maintenance Department, a service department, undertakes repairs and maintenance of all government departmental vehicles in the State. There are about 375 vehicles attached to various government departments in this district. In order to cater to the needs like repairs and maintenance of these vehicles, a Government Automobile Workshop at Kancheepuram was commissioned on 11 March 1972. It is headed by an Automobile Engineer with supporting staff of 67 on the technical and ministerial side.

APPENDIX - 1

List of Trunk Roads in the District in 1939

(Length)

			Mile	Furlong
(1)	(2)		(3)	(4)
1.	St. Thomas' Mount to Poonamallee and Avadi	..	12	0
2.	Madras to Ennore	..	7	0
3.	Guindy Race Course Road	..	0	4
4.	Kortalaiyar bridge on the 17th mile of Great Northern Trunk road towards Puthur Railway Station *via.* Nagalapuram	..	33	0
5.	Tirumuzhi junction to Tiruvallur, Uthukottai and Sathiavedu	..	39	0
6.	Sathiavedu to Tada including Varadaiyapalayam branch road	..	22	0
7.	Sadras to Surappan's Choultry on Madras-Bombay Trunk road excluding two-miles in Chingelput Municipality and four miles in Kancheepuram Municipality	..	39	0
8.	Kodambakkam to Sriperumbudur via. Kunnathur excluding three miles in Saidapet Municipality	..	19	0
9.	Marmelong Bridge to Irumbuliyur on the 19th mile of Great Southern Trunk Road excluding 3/4 mile in Saidapet Municipality and to Tambaram Railway Station.	..	12	0
10.	Red Hills to Tiruvallur upto the cart stand joining Tirumuzhi Sathiavedu Road (including cross road)	..	21	0
11.	Korattur to Periyapalayam via. Tinnanur including the apron of Damarapauk anicut	..	18	0
12.	Puduvoyalon Great Northern Trunk Road to Periyapalayam *via.* Arani	..	7	0
13.	Puduvoyal to Tiruppalavanam	..	10	0
14.	Maltby's gate to Ellior's beach excluding one mile in the Saidapet Municipality	..	3	0
15.	Elphinstone Bridge to Lattice Bridge including Thiruvanmiyur branch road	..	2	4
16.	Madurantakam to Chunampet and thence to South Arcot frontier	..	23	4
17.	Cheyyur to Wandiwash upto North Arcot frontier	..	20	0

(1)	(2)		(3)	(4)
18.	Tiruvallur Railway Station to Manimangalam *via.* Sriperumbudur	..	20	0
19.	Walajabad to Vandalur and thence to Kelambakkam	..	31	0
20.	Mamandur Junction to Uttiramerur and to Perunagar	..	20	0
21.	Kancheepuram to Wandiwash miles I (5) to 4(2) and 13(1) to 16(1)	..	6	0
22.	Arkonam to Wandiwash miles I (5) to 4(2) and 13(1) to 16(1)	..	..	..
23.	Arkonam to Kanchipuram 10 to 18 miles	..	9	0
24.	Tirukkalikunram to Mahabalipuram (Seven Pagodas)	..	10	4
25.	Chengalpattu to Tirupporur	..	14	0
26.	Tirupporur to Kelambakkam	..	5	0
27.	Kavarapet to Sathiavedu	..	14	0
28.	Ponneri to Panjetti	..	5	0
29.	Walajabad to Keezhacheri	..	19	0
30.	Singaperumalkoil to Sriperumbudur	..	16	0
31.	Tiruppasur to Kadambattur and Kondanjeri	..	8	0
32.	Nelvoy to Tirukkalikunram	..	20	0
33.	Ponnamallee to Kunnathur	..	4	0
34.	Uttiramerur to Kanchipuram *via.* Magaral	..	16	0
35.	Tiruvallur to Ramanjeri	..	8	2
36.	Tirukkalikunram to Tirupporur via. Manamadi	..	13	0
37.	Lunatic Asylum road	..	1	2
38.	Tiruvottiyur to Ponneri via. Minjur	..	16	0
39.	Madurkarai - Kadalur road	..	16	0
40.	Chitterimedu road	..	1	4
41.	Avadi to Tirumullavoyal	..	4	0
42.	Madavarm - Red Hills road	..	6	0
	Total	..	573	4

* Vipan, Scheme and Road Development for the Madras Presidency, 1935, p.225.

APPENDIX - 2

Important Marketing Roads and Second Class Roads

Important Marketing Roads

1. Vadalur - Walajabad Road (14 miles 3 furlongs)
2. Sadras - Surappan Road (Chengalpattu-Tirukkalikundram 10 M 3 F)
3. Vadalur - Kelambakkam (11 miles 4 furlongs)
4. Vadalur - Walajabad Road (Vadalur to Padappai) (5M2F)
5. Mamandur - Utteramerur Road (21 M 2 F)
   to district limit .. (19 M 6 F)
6. Cheyyur - Wandiwash road .. (21 M 2 F)
7. Madurantakam - Chunampet Road .. (23 M 3 F)
8. South Arcot Frontier Road (2 M 5 F)
9. Malty's Gate to Elliot Beach (3 M 2 F)
10. Kancheepuram - Chengalpattu Road (7 M)
11. Kancheepuram - Wandiwash Road (2 M 6 F)
12. Tinrumush - Satiavedu Road (38 M)
13. Tada - Varadayya Palayam Road (7 M 1 F)
14. Mount Ponnamallee Road (6 M 6 F)
15. Tiruvallur - Bye Pass Road (5 F)
16. Kortalayur Bridge - Puttur Road (32 M 6 F)

Second Class Roads

1. Mental Hospital Road (1 M 2 F)
2. Guindy Race Course Road (0.4F)
3. Sadras - Surappan Road
   (a) Tirukkalikundram - (9 miles 2 F)
   (b) Chengalpattu - Walajabad Road (13 M)
4. Madras - Ennore Road (6 M 4 F)
5. Kodambakkam - Sripurumbudur Road (3 M 5 F)
6. Kancheepuram - Ponnerikkarai Road (1 M 5 F)
7. Tiruvottiyur Bridge - Ponneri to meet Trunk Road (20 M 7 F)
8. Elphinston Bridge - Latice Bridge Road (2 M 2 F)
9. Uttirameru - Kancheepuram (15 M 7 F)
10. Poonamallee - Kunnathur Road (3 M 1 F)
11. Marmalong Bridge - Irumbuliyur Road (Trunk Road near
    Tambaram (6 Furlongs)
12. Madras - Tiruvallur Road (excluding Madras to Avadi 13 M 4 F)
13. Arkonam - Kancheepuram Road (7 M 5 F)
14. Tiruvallur - Manimangalam Road (21 M)
15. Tiruvallur - Red Hills Road (21 M 4 F)
16. Walajabad Keelacheri Road (17 M 2 F)
17. Tiruppachur - Kodanjeri Road (8 M)
18. Satyavedu - Kadur Road (13 M)
19. Kancheepuram - Wandiwash Road (3 M 2 F)
20. Puduvoyal - Periyapalayam Road (7 M)
21. Singaperumal Koil - Sriperumbudur Road (15 M 4 F)
22. Tiruvallur - Ramanjeri Road (8 M 2 F)
23. Korattur - Edappali Road (11 M)
24. Madras - Tiruvallur Road (11 M 2 F)
25. Ponnamallee - Avadi Road (5 M 2 F)

APPENDIX - 3

Length of Roads Maintained by Town Panchayats

Length of Roads in Kms.

	Name of Town Panchayat	*Cement Road*	*Black topped*	*Metal*	*Gravel-led*	*Mud*	*Total*
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.	Maraimalainagar	0.750	24.500	25.500	7.000	8.500	69.250
2.	Mamallapuram	..	2.015	2.451	2.585	0.341	7.392
3.	Tiruttani	0.200	7.426	5.335	1.404	6.650	20.015
4.	Tiruverkadu	..	10.500	12.500	7.500	1.000	3.500
5.	Anakaputhur	..	4.600	6.750	..	..	11.350
6.	Chitalpakkam	..	10.000	10.000	6.000	12.650	38.650
7.	Chinnasekkadu	..	5.269	1.503	1.147	..	6.191
8.	Kundrathur	..	3.000	5.650	5.050	2.156	15.856
9.	Manali	..	22.853	4.498	3.933	..	31.284
10.	Maduravoyal	..	9.941	22.811	0.270	2.000	35.022
11.	Nandambakkam	..	9.500	5.300	0.400	..	10.200
12.	Naravarikuppam	..	6.869	3.955	..	..	10.824
13.	Pammal	..	7.630	10.420	7.900	8.080	34.03
14.	Perungalathur	..	6.014	6.002	6.205	1.104	19.325
15.	Ponneri	..	5.600	4.600	15.500	1.500	27.200
16.	Porur	..	12.580	8.270	1.930	..	22.78
17.	Puzhal	..	4.010	3.550	9.930	3.010	20.50
18.	Puzhuthivakkam	..	29.130	7.450	5.970	2.880	45.43
19.	Poonamallee	..	0.080	12.635	7.410	1.165	21.29
20.	Sriperumbudur	..	2.693	4.190	5.350	..	12,233
21.	Sholanganallur	..	12.850	4.500	2.500	3.500	23.300
22.	Thirunindravur	..	12.500	8.500	2.600	9.600	33.200
23.	Valasaravakkam	..	12.100	11.930	4.990	4.310	33.330
24.	Thirukkazhukundram	..	2.100	10.524	3.950	4.597	21.171
25.	Uthiramerur	..	0.610	3.225	12.218	15.403	31.456
26.	Uthukkottai	..	4.110	3.350	..	..	7.460
27.	Walajabad	..	2.000	8.048	6.310	3.000	19.358
28.	Acharapakkam	..	1.290	4.500	1.700	5.200	12.690
29.	Arani	..	1.000	4.400	3.540	0.060	9.000
30.	Gummidipoondi	..	0.655	1.850	1.451	3.030	6.986
31.	Karunguzhi	..	3.300	7.700	3.100	1.900	16.000
32.	Mangadu	..	7.000	10.800	0.800	..	18.600
33.	Nandivakkam-Guduvancheri	..	7.050	12.700	5.145	..	24.895
34.	Pallipattu	..	..	7.000	..	..	7.000
35.	Podhatoor	..	..	4.860	..	4.000	8.860
36.	Sembakkam	..	11.123	14.224	6.582	..	31.929
37.	Thirupporur	..	0.530	8.530	..	..	9.060
38.	Tirumalisai	..	1.700	7.600	0.850	0.600	10.750
39.	Tiruneermalai	..	5.600	3.400	3.150	4.900	17.050
40.	Edakalinadu	..	..	6.000	3.500	5.600	15.100
41.	Peerkankarunai	..	12.283	7.772	3.454	1.635	25.144
42.	Sevilimedu	..	2.000	6.000	2.000	..	10.000
43.	Madambakkam	..	5.500	6.200	2.000	4.500	18.200

APPENDIX - 3 (Contd.)

1		2	3	4	5	6	7
44.	Perungudi	..	16.000	6.000	6.000	3.000	31.000
45.	Pallikaranai	..	6.220	12.470	..	2.772	21.732
46.	Meenambakkam	0.750	1.250	0.750	..	0.250	3.000
		1.700	312.978	344.473	170.324	128.893	958.367

APPENDIX - 4

Length of Roads Maintained by Panchayat Unions in the District

Sl. no. 1	Name of Panchayat Union 2	Cement Road 3	Black topped 4	Metal 5	Gravelled 6	Total 7
1.	Kancheepuram	..	26.60	77.00	41.00	144.60
2.	Walajabad	..	..	..	46.00	46.00
3.	Uthiramerur	..	38.60	77.80	59.60	176.00
4.	Sriperumbudur	10.60	..	69.00	81.75	161.35
5.	Poonamallee	7.70	..	83.30	11.68	102.68
6.	Kundrathur	..	5.00	106.60	38.30	149.90
7.	Kattankulathur	..	12.80	92.20	..	105.00
8.	Tiruporur	..	..	103.50	32.30	135.80
9.	Tirukazhukundram	..	..	78.80	..	..
10.	Madurantakam	..	22.60	117.40	103.60	243.60
11.	Acharapakkam	..	..	98.00	75.00	173.00
12.	Chithamur	..	5.00	151.00	36.00	192.00
13.	Lathur	..	15.00	46.30	..	61.30
14.	St. Thomas Mount	..	20.00	18.20	4.00	42.20
15.	Villivakkam	3.50	1.00	47.68	..	52.18
16.	Puzhal	..	..	20.30	5.10	25.40
17.	Minjur	..	..	61.45	25.35	86.80
18.	Sholavaram	..	20.20	78.00	41.50	139.70
19.	Gummidipoondi	..	..	..	51.40	51.40
20.	Tiruvellore	..	7.80	93.50	..	101.30
21.	Kadambathur	..	..	62.20	111.40	173.60
22.	Poondi	..	220.00	400.40	108.50	728.90
23.	Ellapuram	..	..	2.60	42.20	44.80
24.	Tiruttani	..	..	54.40	42.20	96.60
25.	Thiruvelangadu	..	..	69.70	27.00	96.70
26.	R.K. Pet	..	..	139.20	4.20	143.40
27.	Pallipet	..	52.40	94.45	20.05	166.90
	Total	21.80	447.00	2242.98	1008.13	3719.91

APPENDIX - 5

Saidapet Division

List of Major Bridges and Cause Ways having a Span of 100 and Above

(30 Metres and above)

Sl.no. (1)	*Name of the Road* (2)	*Location* (3)	*Bridge details* (4)
	Major district Roads		
1.	Mount Poonamallee Road	2/8	R.C.C. Bridge with prestressed and pretensioned beams
2.	Mount Poonamallee Road	3/4	R.C.C. Bridge with -do-
3.	Madras Pulicat Road	50/8	R.C.C. Bridge with 9 spans of 10' each
4.	Madras Pulicat Road	52/4-8	R.C.C. Bridge with 10 spans of 10' each
5.	Madras Pulicat Road	53/10	-do- -do-
6.	Minjur Kattur Tirupalvanam Road	9/0	-do- 4 spans of 25 each
7.	-do-	14/4	-do- 6 spans of 25 each
8.	Madras Pulicat Road	38/2	-do- 20 spans 10 metre each
9.	Tiruvottiyur Ponneri Panjetti Road	8/9-10	R.C.C. Bridge
10.	R.K. Pet Pallipet Road	11/2	R.C.C. Bridge 6 spans of 7.80 M each
11.	Tirupachur Kadambattur Kondencheri Road	9/10	R.C.C. Bridge
12.	-do- -do-	10/5	Bed level causeway L.W.W. 90
13.	Periyakuppam Link Road	0/5-6	-do-
14.	-do-	0/2-4	Highlevel causeway 32 spans of 10 each

APPENDIX - 5 *(Contd.)*

(1)	(2)	(3)	(4)
15.	Tirumahisai-Satyamedu	0/2-4	Highlevel causeway 32 spans of 10 each
16.	-do-	44/2	Perferated causeway R.C.C. 72 nos. of 3 each
17.	-do-	59/9-10	Causeway R.C.C. slab 16 spans of 25 each
18.	Thirumahisai - Sathyamedu Road	64/4	R.C.C. Bridge
19.	Tiruvallore - Tiruttani Road	71/6	Bed level causeway L.W.W. 200 mts.
20.	-do-	50/3	R.C.C. Bridge
21.	-do-	58/9	Submersible bridge 30 spans of 10 each
22.	Red Hills Tiruvellore Road	60/8	Submersible bridge 22 spans of 10 each
23.	-do-	0/8	R.C.C. bridge under construction
24.	Korattur Tinnanur Periyapalayam	8/8/9	Causeway L.W.W. 220
25.	-do-	18/5-6	Bed level causeway L.W.W. 450
26.	Koratalayar Bridge Puthur Road	13/6	Periyapalayam causeway L.W.W. 660
27.	Thandalam Perambakkam Road	21/7-8	C.C. Pavement causeway 430
	Other District Road		
28.	Aranvoyal Kuppam - Koppur Mannur Road	7/2	R.C.C. Bridge
29.	Gummidipoondi Madarpakkam Road	8/4	Skewbridge 5 spans of 10.30 M each R.C.C. Bridge.

APPENDIX - 5 *(Contd.)*

List of Bridges in Chengalpattu Division

Sl. no. 1	*Name of the Bridge* 2	*Location of the Bridge KM* 3
1.	Sadras Surappan Road	29/10
2.	Madras Mamallapuram Road	57/4
3.	GST Road to Cheyyar (*via.*) Padalam	12/34
4.	South Arcot Francies Road	3 1/2
5.	East Coast Road	2 1/4
6.	Kadapakkam Road	2/6
7.	Perumbair Orathy Road	1/6
8.	Cheyyur Wandiwash Road (*via*- Villivakkam)	3/6 (Causeway)
9.	G.S.T. Road to Cheyyur (*via*- Padalam)	11/9-10
10.	Bukkathurai Uthiramerur Road	12/10
11.	G.S.T. Road to Endathur	7/8
12.	Uthiramerur Kammalampoondi and then Cheyyur Wandiwash Road	14/4
13.	Madras Vandalore Walajabad to Keelacheri Road	3/10
14.	Kiloyanagar Road	0/10
15.	Madras Vandalore Walajabad Road	55/8 (Causeway)
16.	Poonamallee - Avadi Road	2/2
17.	Poonamallee - Avadi Road	4/4
18.	Pallavaram - Kunnathur Road	4/6
19.	Kovalam bridge approaches road (17 spans of 60 ft.)	1/6-1/10
20.	East Coast Road subsiderable bridge	18/4-19/6
21.	Paramenkani bridge across Backwater near Paramenkani in East Coast Road	35/5-6
22.	Thenbakkam bridge in East Coast Road	1/6
23.	Uthiramerur Kancheepuram Road	10/8-11/2
24.	Uthiramerur - Kancheepuram Road	22/2-8
25.	Kancheepuram - Wandiwash Road	4/4 - 5/4
26.	Korattur Thinnalur Periapalayam Road	0/2
27.	Walajabad Thirupulivanam Road	0/1-8
28.	Nelvoy Thirukalikundram Road	20/8-10
29.	Mamandur Uthiramerur road to Thirumukkudal (via.) Salvakkam	19/2-20/2

APPENDIX - 6

Names of Express/Passenger Trains which pass through the District

Mail/Express - Between Stations -

Broad Gauge

Madras - Mangalore Mail
Howrah - Chennai Mail
Madras - Mettupalayam Nilgiri Express
Madras - Bangalore Mail
Bombay - Chennai Mail
Dadar - Madras Express
Dadar - Madras Super Fast Express
Madras - New Delhi Grant Trunk Express
Madras - Trivandrum Mail
Madras - Bangalore Express
Madras - Mangalore West Coast Express
Howrah - Madras Janatha Express
Madras- Bangalore Brindavan Express
Madras - Cochin Harbour Terminus Express
Madras - Kakinada Circar Express
Madras - Hyderabad Express
Madras - Tirupati Sapthagiri Express
Madras - Hyderabad Charminar Express
Madras - Tirupati Express
Madras - Erode Yercaud Express
Madras - Coimbatore Cheran Express
Madras - Coimbatore Cheran Express
Madras - Coimbatore Kovai Express
Bokaro/Steel City Tata - Madras Express
Madras - New Delhi Tamil Nadu Express
Madras - Varanasi Express (Bi-weekly) Mon. & Sat.
Madras - Jolarpettai Express
Howrah - MadrasCoromandel Express
Cochin - Garakphur Express (Weekly Friday)
Cochin - Gawahati Express (Gawahati)
Ahmedabad - Madras Navajivan Express
Madras - Patna Express
Cochin - Howrah Express
Cochin - Bilaspur Express

Metre Gauge

Madras - Rameswaram Express
Madras - Tuticorin Pearl City Express
Madras - Quilon Mail

Mail/Express - Between Stations -

Metre Gauge -

Madras - Rameswaram Sethu Express
Madras - Tiruchi Pallavan Express
Madras - Madurai Pandyan Express
Madras - Tirunelveli Nellai Express
Madras - Madurai Vaigai Express
Madras - Tiruchi Cholan Express
Madras - Karaikudi Kamban Express
Madras - Tiruchi Rock Fort Express

Passenger Trains

Broad Gauge : 53 Passenger Trains
Metre Gauge : 10 Passenger Trains and 285 EMUs.
Kancheepuram HSG I HOP 631 501.
RS (Chennai Region)

APPENDIX - 7

Classified List of Post Offices in Kancheepuram Division as on 1st April 1991

1. Ayyampettai (MCM) 631 601. Class II SO PCO.

1. Ekanampet
2. Muthialpet ND
3. Naickenpet
4. Thimmarajampettai PCO

2. Baluchetty Chattiram 631 551 Class III SO (CO) PCO.

1. Damal PCO
2. Krishnapuram
3. Muthavedu
4. Musaravakkam E-PCO

*3. Big Kancheepuram 631 502 LSG * TSO PCO.*

1. Govindavadi
2. Iyyankarkulam PCO
3. Kammavarpalayam E-PCO
4. Kilakattur PCO
5. Kuram
6. Melkadirpur
7. Olimohamedpet PCO ND
8. Orikkai
9. Peramanallur
10. Sevilimedu PCO
11. Sirukaveripakkam PCO
12. Thimmasamudram
13. Vaiyavur
14. Veliyur

4. Edayarpakkam 631 553.

1. Class II EO (Cl. II SO) PCO
1. Chellampattadi
2. Ekanapuram PCO
3. Melmaduramangalam E
4. Pichivakkam PCO
5. Pullalur
6. Purisai
7. Valathur
8. Kapponkottur PCO

5. Kaliyampoondi SO 603 402. Class III SO PCO

1. Alisoor
2. Arasanimangalam PCO
3. Elanagar
4. Hanumanthandalam
5. Pennalur

6. Kancheepuram Bus Stand 631 501. Class III SO PCO ND TSO

Delivery from Kanchipuram to

7. Kancheepuram Collectorate 631 501 Class II ND TSO PCO.

Delivery from Kanchipuram HO

8. Kancheepuram Cutcherry 631 501. Class II ND TSO PCO.

Delivery from Kancheepuram HO

9. Kancheepuram RS 631 502. EDSO ND PCO.
Delivery from Big Kancheepuram SO.

10. Karaipettai SO 631 552. Class II SO (CO) PCO.

1. Attuputtur PCO.
2. Karai
3. Nirvalur
4. Parandur PCO.
5. Rajakulam PCO.
6. Singadivakkam PCO.
7. Siruvakkam PCO.
8. Siravallur PCO.
9. Vedal PCO.

11. Little Kanchipuram SO 631 503. Class I TSO PCO.

1. Thenambakkam E

12. Magarlal 631 603 Cl. III SO PCO.

1. Arapakkam PCO.
2. Kavanthandalam PCO.
3. Malayankulam
4. Neyyadupakkam PCO.
5. Olugarai
6. Puthali
7. Vayalakkavur

13. Manampathi 603 403 Class III SO PCO

1. Manampathi Kandigai
2. R.H. Kandigal
3. Thandarai

14. Palayaseevaram 631 606. Class III PCO (SO)

1. Madhur
2. Pudur

APPENDIX - 7 *(Contd.)*

3. Ullavur PCO.
4. Thirumukkudal PCO.

15. Pannur 602 108. Class III SO PCO

1. Kannur PCO
2. Kandoor PCO
3. Maduramangalam PCO
4. Tirupandiyur

16. Pattunoolchatram 602 105. Class III SO ND PCO

17. Pillaiyarpalayam 631 501. Class III ND TSO PCO.
(Delivery from Kancheepuram HO)

18. Perungar EDSO 603 404 PCO.

19. Sankaramutt-Kanchi 631 502. Class II ND TSO PCO:
(Delivery from Big Kanchipuram LSG SO)

20. Sriperumbudur 602 105. LSG SO (CO PCO.)*

1. Gunduperumbedu PCO.
2. Mathur PCO.
3. Pennalur
4. Pillaipakkam
5. Pondur
6. Thandalam PCO.
7. Thodukadu
8. Ulundai PCO.
9. Valarpuram PCO.
10. Vayalur PCO.

21. Sunguvarchatram SO 602 106. Class III SO (CO) PCO.

1. Nambakkam ND - PCO.
2. Sendamanagalam PCO.

22. Thenneri 631 604 Cl. III SO PCO

1. Echoor
2. Kunnam PCO.
3. Panruti PCO.
4. Sinnivakkam
5. Varanavasi PCO.

23. Thoopul 631 501 Class III ND TSO PCO.
(Delivery from Kanchipuram HO)

24. Tirukatchinambi St. 631 503. Class III ND TSO PCO.
(Delivery from Little Kanchi.)

25. Uttiramerur 603 406 LSG SO (CO) PCO.*

1. Agaramduli PCO.
2. Kammalampundi PCO.
3. Kavanurpuducheri
4. Kilianagar PCO.
5. Malliankaranai
6. L. Endathur PCO.
7. Maruthuvambadi
8. Sirungoli
9. Tirupulivanam PCO.
10. Tittalam PCO.
11. Vadanallur PCO.

26. Walajabad 631 605 Class I SO (CO) PCO RS.*

1. Assor PCO.
2. Avalur PCO.
3. Nathanallur
4. Puliambakkam
5. Thammanur
6. Serkadu ND
7. Uttukkadu PCO.

NAME OF THE HO : KANCHEEPURAM HO		
NO. OF SOS	:	24
NO. OF EDSOS	:	2
NO. OF BOS	:	98

APPENDIX - 7 *(Contd.)*

Tiruvallur HPO - Kancheepuram Division Chengalpattu Region

II. Tiruvallur HO 602 001.
HSG-II (CHO PCO RS.)
Chengai - Anna District

1. Ammavarikuppam 631 301.
Class III SO (CO PCO.)
1. Balapuram
2. Chandravilasapuram
3. Kadananagaram
4. Mahankalipuram E
5. Thayagapuram

2. Arungulam 631 202.
Class III SO PCO.
1. Chivadam PCO.
2. Nemili PCO.

3. Athimanjeripeta 631 202.
Class III SO PCO.
1. Athimanjeri
2. Balakrishnapuram
3. Karlambakkam
4. Kodivalasa
5. Konasamudram PCO
6. Kothakuppam
7. Nochili

4. Erumbi 631 302 Cl. II SO PCO.
1. Chenurmallavaram PCO
2. Myladumparai PCO
3. Paivalasa
4. Peddanagapudi
5. Peddaramapuram
6. Rangapuram
7. Srikalikapuram
8. Thamaraikulam
9. Vediyangadu
10. Veeramangalam
11. Venkataperumalrajapuram

5. Ikkadu 602 021. Cl. II SO(CO) PCO.
1. Karikalavakkam
2. Kilanur PCO.
3. Moonavedu PCO.
4. Odhikadu ND-PCO.
5. Perattur PCO.
6. Thalakancheri PCO.

6. Kadambathur 631 203 Class
ISO (CO) PCO RS.
1. Egattur
2. Kalvandur E
3. Pandur EP-PCO.
4. Pattaraiperumbudur PCO.
5. Pudumavilangai.
6. Selai.
7. Senji
8. Tirupasur PCO.
9. Vidaiyur.

7. Kakalur Industrial Estate
Class III SO PCO 602 003.

8. Kanakkammachatram
631 204.
Class II SO (CO) (PCO)
1. Arcot PCO.
2. Illupur
3. Kanjipadi PCO.
4. Muthukondapuram
5. Nabalur
6. Nedambaram
7. Namajeri
8. Ramapuram

9. K.G. Kandigai 631 205 Cl. II SO PCO
1. Seerakuppam PCO.
2. Cherukkannur
3. Koramangalam PCO.
4. Mambakkam
5. S. Agraharam
6. Sirugumi PCO.
7. Thadur PCO.
8. T.C. Kandigai PCO.
9. Veerakaverirajapuram
10. V.K.N. Kandigai PCO.

10. Lakshmipuram 602 204 Cl. III ND
TSO
(Delivery from Tiruninravur RS)

11. Madduru 631 206 Cl. III SO PCO.
1. Buchireddipalli PCO.
2. Krishnasamuduram
3. Kamasamuduram

12. Manavalanagar 602 002 Cl. II XSO
(CO PCO.)
1. Illupur
2. Kilnallathur
3. Kelnallathur PCO.
4. Nungambakkam
5. Polivakkam PCO.
6. Sengadu PCO.

13. Palavakkam 602 028 EDSO PCO.

14. Pallipat 631 207 PCO (CO) Cl. I. SO
1. Echambadi
2. Konetampet

APPENDIX - 7 *(Contd.)*

3. Karimbedu PCO.
4. Kolathur PCO.
5. Kumararajupeta PCO.
6. Nediyam PCO.
7. Punyam PCO.
8. Samanthawada
9. Sanakuppam PCO.
10. Veligaram
11. Venkatarajakuppam E

15. Pallipet Baazar 631 207 Cl. III ND SO TSO PCO.
Delivery from Pallipet SO.

16. Perambakkam 631 402 Cl. III SO.
1. Kilacheri PCO.
2. Kondancheri E
3. Kuvam
4. Mappedu PCO.
5. Narasingapuram

17. Pennalurpeta 602 022. EDSO PCO.

18. Periapalayam 601 102 Cl. III SO PCO.
1. Acthivakkam
2. Kannigaipair PCO
3. Majankaranai
4. Mukkarambakkam
5. Nelvoye
6. Thandalam PCO
7. Vadamadurai PCO

19. Poduturpeta 631 208 Cl. III SO (CO) PCO.
1. Bommarajupet
2. C.N. Kandigai PCO.
3. Jangalapalli
4. Kakalur
5. Keechalam PCO.
6. Melapudi
7. Nedigallu
8. Pandravedu
9. Perumanallur
10. Pettaikandigai
11. Sevattur PCO.
12. Sorakeyapeta PCO.
13. T.T. Kandigai PCO.

20. Podaturpeta West 631 208. Class III ND TSO PCO. E.
(Delivery from Podaturpeta)

21. Poondi 602 023 (Tiruvallur) Class II SO (CO) PCO.
1. Allikuzhi PCO.
2. Devandavakkam PCO.
3. Nambakkam
4. Neiveli
5. Nelvoy E
6. Odappai
7. Placepalayam PCO.
8. Pullarambakkam
9. Sendrayanpalayam PCO.
10. Timmaboopalapuram PCO.
11. Vellathukottai.

22. Poonimangadu 632 212 Cl. III SO. PCO.
1. Nallathur PCO.
2. Thalavedu

23. Ponpadi RS 631 213 Cl. III SO. PCO.
1. Alamelumangapuram PCO.
2. Ponpadi, NDPCO.

24. Ramakrishnan Rajapeta 631 303 Class II SO PCO.
1. Adivarahapuram
2. Ammeneri
3. Veeranathur

25. Saraswathnagar 631 211.
1. Karthikeyapuram
2. Kesavarajupeta

26. Tiruninravur RS 602 024 Class I SO PCO (CO RS)
1. Karlapakkam
2. Komakkambedu
3. Kottambedu
4. Nemilicherry PCO.
5. Pakkam
6. Perumalpattu
7. Sivanvoyal PCO
8. Vadathur
9. Veppambattu

27. Tiruninravur 602 024 EDSO IND.
(Delivery from Tiruniravur RS)

28. Tiru-CPT 602 025 Cl. III SO PCO (CO)
1. Aranvoyal
2. Kalambakkam E PCO.
3. Koppur PCO.
4. Papparambakkam PCO.
5. Putlur
6. Thozhur

29. Tiruttani 631 209. LSG SO (CO) PCO RS.
1. Agooru
2. Murukambattu PCO.

APPENDIX - 7 *(Contd.)*

3. Netterikandigai
4. Srinivasapuram
5. Suruyanagaram
6. Upper Tiruttani PCO.
7. Velanjeri

30. Tiruttani East 631 209 Cl. III TSO PCO ND.
(Delivery from Tiruttani SO)

31. Tiruttani West 631 209. Class III ND TSO PCO
(Delivery from Tiruttani SO)
1. Tiruttani Hills ND PCO.
2.

32. Tiruttani North Class III TSO ND PCO.
(Delivery from Tiruttani SO)

33. Tiruttani South 631 209. Class III ND TSO PCO.
(Delivery from TTN SO.)

34. Tiruvallur Bazaar 602 001. Class II NDO TSO PCO.
(Delivery from Tiruvallur HO)

35. Tiruvallur RS 602 001. Class III ND TSO PCO.
(Delivery from Tiruvallur HO)

36. Tiruvallur Sannadhi Street, 602 001 Cl. II ND TSO (CO) PCO.
(Delivery from TSR HO)

37. Tiruvallur Nethaji Road 602 001 Class III ND TSO.
(Delivery from Tiruvallur HO)

38. Tiruvelangadu 631 210 Cl. II SO PCO.
1. Athipattu
2. Chinnammapet
3. Karichandrapuram PCO.
4. Kaverirajapuram PCO.
5. Kurmavilasapuram
6. Kunnavalam PCO.
7. Mannur PCO.
8. Pakasala
9. Palayanur
10. Peddakalakuttur
11. Veeraraghavapuram
12. Vyasapuram

39. Uttukottai 602 026 Class III SO (CO) PCO.
1. Coonipalayam PCO.
2. Mambakkam PCO.
3. Pesandur E
4. Pondavakkam
5. Seethanjeri PCO.
6. Sulaimeni
7. Tharakashi PCO.

40. Vanganur 631 304. Class III SO PCO.
1. EMR Kandigai
2. Rajandgaram (Rajanagaram)

41. Velliyur 602 207 ED SO PCO.

42. Vengal (CPT) 602 103. Class III SO PCO.
1. Tamaraipakkam E
2. Enambakkam
3. Kalpattu
4. Meyyur PCO.
5. Poorivakkam
6. Sembedu
7. Tirukandalam

Name of HPO	No. of SOs.	No. of ED SOs.	No. of BOs.
Tiruvallur HPO 602 001.	38	4	175

Explanation of Symbols

*	Cash Office	TSO	:	Town Sub Office
E	Experimental Office	RS	:	Railway Station
ND	No. Delivery Office			

Consolidation of Offices in Kancheepuram Division

Category	Kancheepuram HO	Tiruvallur HO	Total
Head Office			
HSG - I	1	-	1
HSG - II	-	1	1
Sub Offices			
LSG (Regular)	3	1	4
Class I	2	4	6
Class II	6	12	18
Class III	13	21	34
EDSOS	2	4	6
EDOs.	98	175	273
	125	218	343

Name of the places where there are more than one delivery	Name of Delivery Offices.
1. Kancheepuram	1. Kanchipuram HO 631 501. 2. Big Kanchipuram LSG SO 631 502. 3. Little Kanchipuram SO 631 503. Cl. I SO.
2. Uttiramerur	1. Uttiramerur LSG SO 603 406.
3. Tiruttani	1. Tiruttani LSG SO 631 209.

List of offices using experimental set of stamps and seals.

Sl. no.	Name of office	Experimental Stamp no.
1.	Nelvoy BO a/w Poondi SO	TN 167
2.	Musaravakkam BO	TN 67
3.	Pandur BO	TN 1781
4.	Kalambakkam BO	TN 71
5.	Podaturpet West	TN 1768
6.	Kammavarpalayam	TN 49
7.	Kaivandur	TN 229
8.	Nelmaduramangalam	TN 249
9.	Perandur	TN 246

List of offices provided with Morse Teleprinter and PCO facility

1. Tiruvallur HO 2. Tiruttani LSG SO 3. Sriperumbudur LSG SO.

List of Offices having PCO and Morse facility

1. Ammavarikuppam
2. Baluchetty Chatram
3. Ikkadu
4. Kadambathur
5. Kanakkammachatram
6. Karaipettai
7. Manavalanagar
8. Pallipet
9. Podaturpetta
10. Poondi
11. Sunguvarchatram
12. Tiruninravur RS
13. Tiru - CPT
14. Tiruvallur Sannadhi Street
15. Uttukottai
16. Uttiramerur
17. Walajabad

Classified List of Post Offices in Chengalpattu Division as on 1st April 1991

Chengalpattu Head Office - HSG - 1 603 001.

1. Acharapakkam SO Class I SO PCO 603 301.

1.	Acharapakkam	RS No Delivery BO
2.	Indalur	
3.	Irumbuli	.
4.	Kattukudalur	PCO Phonocom
5.	Kayapakkam	PCO Phonocom
6.	Melmaruvathur	PCO Phonocom
7.	Pakkam	
8.	Parukkal	
9.	Perukaranai	
10.	Sendivakkam	
11.	Sirunnagalur	
12.	Sothupakkam	
13.	Unamalai	PC O Phonocom

2. Acharapakkam West Class III NDSO 603 301
(Delivery from Acharapakkam SO)

3. Alagesanagar Class III NDSO Phonocom
(Delivery from Chengalpattu HO) 603 001

4. Athur - Cpt Class III Phonocom PCO 603 101.

1. Palur Phonocom
2. Reddipalayam
3. Thimmavaram
4. Villaiambakkam

5. Cheyyar Class I C.O. PCO 603 302

1. Chengattur
2 Cheyyur North NDBO
3. Iranyasidhi
4. Irumbedu
5. Nainarkuppam Phonocom PCO
6. Palayur
7. Paneyur
8. Perumbakkam
9. Zamin Budur

6. Chengalpattu Bazaar Class II NDTSO PCO Phonocom (Delivery from Natham Cpt) 603 002.

7. Chengalpattu Bus Stand Class III ND TSO 603 002 (Delivery from Natham-Cpt)

8. Chengalpattu Cutcherry Class II ND TSO PCO (Delivery from Natham-Cpt) Phonocom 603 002.

9. Chengalpattu Medical College Class III ND TSO PCO. (Delivery from Chengalpattu HO) Phonocom 603 001.

10. Chengalpattu RS Class III ND TSO PCO Phonocom (Delivery from Chengalpattu HO) 603 001.

11. Chithamur Class III C.O. PCO

1. Kattudevadur Phonocom PCO
2. Onambakkam Phonocom PCO
3. Vilangamur Phonocom PCO
4. Periavenmani

12. Chunampet Class III CO PCO 603 401

1. Andarkuppam
2. Kadukalur
3. Vannianallur
4. Vedal
5. Velur

13. Elapakkam Class III Phonocom PCO 603 201

1. Kattukaranai
2. Madhur
3. Padiri
4. Ramapuram Phonocom PCO

14. Guduvancheri Class I CO PCO 603 202

1. Kannivakkam
2. Karanaipuduchery

3.	Kayarambedu	Phonocom PCO		
4.	Madambakkam			
5.	Urapakkam			
15.	Gundur CPT Class III NDTSO (Delivery from Natham-CPT)	Phonocom TSO		603 002
16.	Kalpakkam LSG SO CO	PCO	603 002	
1.	Ayapakkam			
2.	Manamai			
3.	Melperumalcheri			
4.	Vayalur			
5.	Vengapakkam			
6.	Vittalpuram	Phonocom PCO		
17.	Karunguli	Class I SO PCO		603 303
1.	Janakipuram			
2.	Kallapiranpuram			
3.	Kathiricherry			
4.	Keelavalam			
5.	Kinar	Phonocom PCO		
6.	Kinarkandigaipudur	Phonocom PCO		
7.	Malapalayam			
8.	Malayalipettai	Phonocom NDBO PCO		
9.	Melavalam			
10.	Pudupattu			
11.	Thatchur			
12.	Vedavakkam			
13.	Veeranakunnam	Phonocom PCO		
18.	Kattankolathur	Class I CO PCO		603 203
1.	Kavanur			
2.	Ninnakarai			
3.	Panankettur			
19.	Kudapakkam Class III	Phonocom PCO		603 304
1.	Kolathur	Phonocom PCO		
2.	Kottaikadu	Phonocom PCO		
3.	Kudapakkam East NDBO			
4.	Sembulipuram			
5.	Vilambur	Phonocom PCO		
20.	Kuvathur Class II	Phonocom PCO		603 305
1.	Kadalur			
2.	Koddavoor	Phonocom		
3.	Mugaiyur	Phonocom		

4.	Nedumaram			
5.	Nerkunapattu			
6.	Seekananankuppam	Phonocom		
7.	Vepancheri			
21.	Madurantakam	ESG SO	C.O. PCO	603 306
1.	Arungunam	Phonocom PCO		
2.	Morapakkam	Phonocom PCO		
3.	Murugambakkam	Phonocom PCO		
4.	New Mambakkam			
5.	Perumbakkam	Phonocom PCO		
6.	Vanniarpettai NDBO			
22.	Madurantakam East III NDTSO PCO Phonocom (Delivery from Madurantakam SO)			603 306
23.	Mamallapuram Class I C.O. PCO			603 104
1.	Kadambadi	Phonocom PCO		
2.	Kokilamedu			
3.	Koothavakkam			
4.	Pattipulam			
5.	Perur			
6.	Poonjeri			
7.	Vadakamambadi			
8.	Zamin Paiyanur	Phonocom PCO		
24.	Manambathi Class III	Phonocom PCO		603 105
1.	Sirudavur			
25.	Maraimalainagar Class II	C.O. PCO		603 209
26.	Melamayoor Class III NDSTO Phonocom PCO 603 001 (Delivery from Chengalpattu HO)			
27.	Natham - CPT LSG SO C.O. PCO			603 002
1.	Ammanambakkam			
2.	Kunnavakkam			
3.	Meleripakkam			
4.	Nenmeli			
5.	Paranur			
6.	Pulipakkam			
7.	Vallam			
28.	Orakattupettai Class III	Phonocom PCO		603 106.
1.	Arumbuilyur	Phonocom PCO		
2.	Sathanjeri			
3.	Seethananjeri	Phonocom PCO		
4.	Thiruvanaikoil			
5.	Vitchoor	Phonocom PCO		

29.	Orathy Class III	Phonocom PCO	603 307.
1.	Ananthamangalam	Phonocom PCO	
2.	Sirudamur		
3.	Sithamur		
4.	Vadamanipakkam		
30.	Padalam Class II	C.O. PCO	603 308
1.	Budur		
2.	Isur		
3.	Malavaiyanur		
4.	Palayanur		
31.	Pavanjur Class II	Phonocom PCO	603 312
1.	Anaicut	Phonocom PCO	
2.	Lathur		
3.	Kalkulam		
4.	Nelvoy		
5.	Seevadi	Phonocom PCO	
32.	Polambakkam Class III	C.O. PCO	603 309
1.	Mugundagiry		
2.	Neerpair	Phonocom PCO	
3.	Nugumbal		
4.	Paiyambadi	Phonocom PCO	
5.	Puthirankottai	Phonocom PCO	
33.	Ponvilainthakalathur Class III Phonocom PCO		
1.	Anur		
2.	Salur		
3.	Sogandi		
4.	Ponpathirkottam	Phonocom PCO	
5.	Vallipuram	Phonocom PCO	
6.	Vazhuvadur	Phonocom PCO	
34.	Pudupattinam Colony Class II NDSO Phonocom PCO (Delivery from Kalpakkam SO)		603 102.
1.	Pudupattinam	NDBO	
35.	R.R.C. Kalpakkam EDSO No-delivery Phonocom PCO (Delivery from Kalpakkam SO) 603 102.		
36.	Madras Class III NDSO (Delivery from Kalpakkam SO)		603 102.
37.	Salvakkam Class II Phonocom PCO 603 107.		
1.	Amambakkam	Phonocom PCO	
2.	Chithanakkavur		

3.	Edayambudur		
4.	Kattiyapandal		
5.	Kilavadi		
6.	Kunnavakkam		
7.	Nelvoy	Phonocom	
8.	Olaiyur		
9.	Palliagaram		
10.	Perungozhi		
11.	Porpandal		
12.	Valathodu		
38.	Sembakkam Class II Phonocom PCO		603 108
1.	Hanumanthapuram	Phonocom PCO	
2.	Kalvoy		
3.	Karumbakkam		
4.	Kottamedu		
5.	Madayathur		
6.	Melaiyur		
7.	Mullipakkam	Phonocom PCO	
8.	Nellikuppam	Phonocom PCO	
9.	Peria Irumbedu		
10.	Senneri		
11.	Sirukundram		
12.	Tiruvadisoolam	Phonocom PCO	
39.	Senguntharpettai Class III Phonocom PCO NDSO (Delivery from Madurantakam SO)		703 306
40.	Sugaperumalkoil Class I	C.O. PCO	603 204
1.	Anjur		
2.	Appur		
3.	Chettipuniyam		
4.	Elutchur	Phonocom PCO	
5.	Karunilam		
6.	Melrosapuram		
7.	Thirukatchur		
8.	Vadakkupattu	Phonocom PCO	
9.	Venkatapuram		
41.	Thozhupedu Class II	Phonocom PCO	603 310
1.	Ayakunamkolathur		
2.	Isur		
3.	Karassangal		
4.	Nerkuman		
5.	Peruberkandigal		

6.	Seethapuram		
7.	Sirunagar	Phonocom PCO	
8.	Sirumailur	Phonocom PCO	
42.	Tirukalukundram LSG SO	C.O. PCO	603 109
1.	Ammanambakkam		
2.	Desumugipettai		
3.	Edaiyur		
4.	Irubulicherry		
5.	Kuzhipanthandalam	Phonocom PCO	
6.	Mullikolathur		
7.	Oragadam		
8.	Pandur		
9.	Pattaraikalani		
10.	Puliyur		
11.	Suradimangalam	Phonocom PCO	
12.	Thatthalur		
13.	Veerapuram		
43.	Tirukalikundram Bazaar Class III Phonocom NDSO PCO (Delivery from Tirukalikundram S.O.)		
44.	Tiruporur Class II C.O. PCO		603 110
1.	Illalur		
2.	Kayar		
3.	Venbedur		
45.	Vedanthangal Class III	Phonocom PCO	603 314
1.	Pulithivakkam		
2.	Vellaputhur		
46.	Venpakkam Class III	Phonocom PCO	
1.	Bukkathurai	Phonocom PCO	
2.	Mamandur	Phonocom PCO	
3.	Manapakkam	Phonocom PCO	
4.	Meyur	Phonocom PCO	
5.	Ozhalur	Phonocom PCO	
6.	Pazhamathur		
7.	Tiruvandavar		
8.	Tirumeni		
47.	Zamin Endathur Class III Phonocom PCO		603 311
1.	Palur		
2.	Ozhavetti		
3.	Thiruvadur		

	Delivery Office	No Delivery Office
H.O.	1	-
SOs.	32	14
EDSO	-	1
BOs	195	5

Consolidation

HSG I	*HSG II*	*LSG*	*Cl.I*	*Cl.II*	*Cl. III*	*EDSO*	*EDBOS*
1	1	4	6	12	24	1	200

Consolidation-Sub Division Wise

	HSGI	*LSGI*	*CLI*	*CLII*	*CLIII*	*EDSO*	*EDBOS*
Chengalpattu East	-	2	2	4	8	1	60
Chengalpattu West	-	1	2	6	6	-	69
Madurantagam	-	1	2	2	10	-	71
Total	1	4	6	12	24	1	200

Fiction : Chengalpattu North Division which was formed with effect from 2 June 1975 with Head Quarters at Tambaram was renamed as Tambaram Division from 1 June 1984. The Division comprised of major portions of Sriperumbudur Taluk and Ponneri Taluk, Some of the Post Offices in Saidapet Taluk are in Madras City South Division and some Post Offices of Sriperumbudur Taluk are in Kancheepuram Division.

The area and population of each taluk is given below

	Area Square Miles	*Population* *Rural*	*Urban*
Saidapet	210.94	413623	290069
Sriperumpudur	304.73	311220	53338
Arni	443.29	176593	

Number of Post Offices in Tambaram Division

Offices	:	3
Departmental Sub Offices	:	102
Departmental Sub-Offices	:	6
Departmental Branch Offices	:	162

Names of Combined Offices in Tambaram Division

Under Ambattur H.O.

1. Ambattur H.O., 2. Ambattur Industrial Estate, 3. Arni - CPT, 4. Chitlapakkam, 5.Ennore Thermal Station, 6. Gummidipundi, 7. Madarpakkam, 8. Minjur, 9. Ponneri, 10. Pozhal, 11. Pulicat, 12. Redhills, 13. Solavaram

Under Avadi Camp H.O.

14. Avadi I.A.F., 15. CRP Camp, 16. Kamarajnagar, 17. Kunnathur CPT, 18. Maduravoyal, 19. Mangadu, 20. Nazarethpettai, 21. Pattabiram, 22. Poonamallee, 23. Sathyamurthynagar, 24. Somangalam, 25. Tirumazhisai, 26. Tiruverkadu

Under Tambaram H.O.

27. Anakaputhur, 28. Christian College, 29. Chromepet, 30. Kilambakkam, 31. Kovalam, 32. Padappai, 33. Pallavaram, 34. Pammal, 35. Porur, 36. Rajajinagar, 37. Selaiyur, 38. Srinivasanagar, 39. Tambaram East, 40. Tambaram IAF., 41. Tambaram Sanatorium, 42. Vandalur

Phonocom Facility : It is available in Manali New Town.

Post Box : There are 1355 Post Boxes at Tambaram Division as on 31st March 1991.

Speed Post : Speed Post Booking is available at the four offices, viz., Avadi Camp, Ambattur Industrial Estate, Padi and Chromepet.

Classified List of Post Offices in Kancheepuram Division as on 1st April 1991

Sl. no.	*Name of the office with status*	*Information about tele-communication facilities*	*Postal Index code*	*Delivery from (in respect of No-delivery office)*	*Sorting Office*
1	*2*	*3*	*4*	*5*	*6*
	Ambattur H.O.				
	Ambattur Head Office SG-I	OO (TP) P	600 053		
	Ambattur Bazaar III-N			Ambattur	
	Ambattur Indl. Estate SG-II	OO (TP) P	600 058		
	Pallipattu Br.				
	Ambattur West		600 053		
	III-N				
	Tiruvenkatanagar B-N				
	Oragadam B-N				
	Arni-CPT III	OO	600 101		
	Panayancheri B				
	Pondavakkam B				
	Rallapadi B				
	Ennore R.S. S-II-N				
	Kamarajnagar B-N			Ennore Thermal Station 600 057	
	Ennore Thermal Station LSG	OO	600 057		
	navur S-III-N			Ennore Thermal Station 600 057	
	Gummidipundi S-LSG	CO-P	601 201		
	Arambakkam RS-B				
	Devambattu - B	P/CO			
	Edoor - B				
	Elavur - B	P/CO			
	Iguvarpalayam - B				
	Kallur - B				
	Kangavaram - B				
	New Gummidipundi - B				
	Peiaoblapuram - B				
	Podiyarankulam - B				
	Siddarajakandigai - B				

1	2	3	4	5	6
	Sirupulalpettai - B Sunnambukulam - B Tervali - B Kadirvedu S-III-N Kaladipet S-II-N Tondiarpet Rly. Colony B-N			Pozhal 600 066 Tiruvottiyur 600 019	
Kavarapettai S-III	Chinnambedu - B Kilikodi (E) - B Kilmudalamedu - B Puduvoyal - B Puvalamedu - B		601 206		
Korattur S-I	Korattur West B-N	OO	600 080		
Kadarrpakkam S-III	Kannankottai - B Nanellore - B Pallavadu - B Roshanagaram - B Thanipoondi - B Thervoy - B	OO	600 076		
Madhavaram S - II	Vadaperumbakkam - B	00	600 060		
Madhavaram East S - III - N		Madhavaram	600 060		
Madhavaram Milk Colony LSG		OO-P	600 051		
Manali -S-LSG		OO	600 068		
Manali New Town (E) B-II	Andarkuppam - B Vellivoyalchavadi - B Kannurpettai - S-III-N Kenembedu (E) S-III-N	Phonocom	600 103	Padi 600 050 Ambattur 600 053	
Minjur S-I	Anuppambattu - B Devadanam - B Jothinagar - B Kattur - B Neidavoyal - B Seemapuram South - B Subbareddipalayam - B Tiruvellaivoyal - B Vellur - B Voyallur - B	CO-(P) CO-P	601 203		

1	2	3	4	5	6
Koolakadi - S-III-N				Madhavaram 600 060	
Padi - S-LSG		OO	600 050		
1.	Jagadambigai Nagar B-N				
Padi South S-III-N				Padi 600 050	
1.	Mogappair B-N				
Padianallur S-III-N				Redhills 600 052	
1.	Mondiammanagar B-N				
Ponneri S-LSG			OO-P	601 204	
1.	Aladu - B				
2.	Amoor - B				
3.	Arasur - B				
4.	Krishnapuram - B-N				
5.	Medur - B				
6.	Panjetti - B				
7.	Perumbedu - B	P			
8.	Reddipalayam - B				
Ponneri Public Offices S-III-N				Ponneri 601 204	
Ponniammanmedu (E) S-III			600 110		
	Pozhal S-II	OO	600 066		
Prithivipakkam S-III-N			Ambattur 600 053		
Pulicat S-III		OO-P	601 205		
1.	Kolur - B				
2.	Tirupalavanam - B	OO-P			
Redhills S-LSG		OO-P	600 052		
1.	Alamadhi - B				
2.	Boochiathipatt - B				
3.	Pammadukulam - B				
4.	Vadakarai - B				
5.	Vichoor - B				
6.	Vilangadupakkam - B				
7.	Alamadi Cattle Farm (E) - B				
8.	Guruvoyal - (E) - B				
Redhills Bazaar S-III-N				Redhills 600 052	
Shanmugapuram S-III-N				Tiruvottiyur 600 019	
SIDCO Estate S-LSG			600 098		
SIPCOT Indl. Estate S-III-N (Gummidipundi)				Gummidipundi 601 201	

1	2	3	4	5	6
Pallavaram S-II Alinjivakkam (E) - B[a] Budur - B Erumaivettipalayam - B Jagannathapuram -B Kayar - B Orakkadu - B		OO	600 067		
Tiruvottiyur S-HSG-II			600 019		
Tiruvottiyur North S-III-N				Tiruvottiyur 600 019	
Tiruvottiyur West (E) EDSO-N			Tiruvottiyur	600 019	
Vijalakshmipuram S-III-N			Ambattur	600 053	
WIMCO Nagar S-II-N				Tiruvottiyur 600 019	

1	2	3	4	5	6
	II. Avadi Camp Head Office				
	Avadi Camp H.O. HSG - I		600 054		
	Avadi S-II-N			Avadi Camp 600 054	
	I.A.F. Qtrs. S-III-N		600 055	Avadi IAF 600 055	
	Avadi IAF S-LSG	C.O	600 055		
	Koduvalli - B				
	Mittanamallee - B-N				
	Korai - B				
	Palavedu - B				
	Pandeeswaram - B				
	I.P. Camp S-LSG	C.O.	600 065		
	Central Vehicle Depot III-N		600 065	Avadi IAF 600 055.	
	V.R.D.E. S-III-N (Central Vehicle Research and Development Establishment)				
	Gandhinagar B-N				
	Kamarajnagar S-I	C.O.	600 071		
	Paruthipattu - D				
	Kunnathur - CPT S-II	C.O.	600 069		
1.	Nandambakkam - B				
2.	Sputhmalayambakkam - B				
3.	Sirukalathur - B				
	Maduravoyal S-II	C.O.	602 102		
1.	Ayanambakkam - B				
2.	Vanagaram - B				
3.	Nolambur (E) - B				
	Mangadu S-II	C.O.	602 101		
1.	Gerugambakkam - B				
2.	Kovur- B				
3.	Paraniputhur - B				
4.	Thandalam - B				
	Nazarethpettai S-III	C.O.	601 203		
1.	Malayambakkam -B				
	Pattabiram S-LSG	C.O.-P	600 072		
1.	Kolappancheri - B				
2.	Soranjeri - B				
3.	Voyalanallur - B				

1	2	3	4	5	6
Pattabiram East S-III-N				Pattabiram 600 072	
1.	Arignar Anna Nagar B-N				
Poonamallee S-LSG		C.O.-P	600 056		
1.	Kattupakkam - B				
Poonmallee East S-II-N				Poonamallee 600 056	
1.	Sennerkuppam B-N				
Railway Carshed Complex S-III			600 109		
Sathyamurthynagar S-I		C.O.	600 062		
1.	Kovilpadagai - B				
2.	Tirumullaivoyal - B				
3.	Vellanur - B				
Senthilnagar S-III-N				Sathyamurthy nagar 600 062	
Somangalam (E) EDSO		C.O.-P	602 109		
	Tank Factory - Avadi S-II-N			Avadi Camp 600 054	
Thandarai S-III-N				Pattabiram 600 072	
Tirumazisai (E) S-III		C.O.		602 107	
1.	Kuttambakkam - B				
2.	Nemam (E) - B				
3.	Puduchatram - B				
4.	Sembarambakkam - B				
5.	Udayavarkoil - B				
6.	Vellavedu - B				
Tiruverkadu S-II		C.O.		600 077	
1.	Ayapakkam - B				
2.	Numbal - B				
3.	Veeraraghavarpuram - B				

1	2	3	4	5	6
Tambaram Head Post Office					
Tambaram Head Post Office H-HSG-I				600 045	
Anakaputhur S- III		C.O.	600 070		
Bharathipuram S-II-N Nemilichery B-N Purushothamanagar B-N					
Chitlapakkam S-LSG			600 064		
Christian College Tambaram S-II-N		C.O.		Tambaram East 600 059	
Chrompet S-HSG-II Darkash - B Tiruneermalai - B Tirumudivakkam - B		C.O.-TP	600 044		
Ganapathipuram Tambaram S-III-N				Tambaram East	
Ganapathipuram Chromepet EDSO-N				Chromepet 600 044	
Gowrivakkam S-III Medavakkam - B Pallikaranai - B			601 302		
Ground Training School S-II-N				Tambaram IAF 600 046	
Kilambakkam S-II Navalur - B Padur - B Pudupakkam - B Thaiyur - B		C.O.-P	603 103		
Kovalam S-III Muttukadu - B Tiruvedanthai - B		C.O.-P	603 112		
L.I.C. Colony - Tambaram EDSO-N				Tambaram East 600 059	
Nagalkeni (E) S-III-N Lakshmipuram B-N				Chromepet 600 044	
Old Pallavaram S-III Bharathinagar B-N Kilakattalai - B Kovilambakkam (E) - B			601 303		

1 2	3	4	5	6
Padappai S-I Mulaipattu (E) - B Manimangalam - B Serpanancheri - B	C.O. C.O/PCO	601 301		
Pallavaram - HSG - II	C.O/TP/P	600 043		
Pallavaram North EDSO-N			Pallavaram 600 043	
Pallavaram South S-III-N			Pallavaram 600 043	
Pammal S-I	C.O.	600 075		
Pammal East S-III-N			Pammal 600 075	
Polichalur S-III		600 074		
Porur S-I Manapakkam - B Mugalivakkam - B	C.O.	600 116	Chromepet 600 044	
Radhanagar S-II-N Nehrunagar B-N				
Rajajinagar S-III-N	C.O.		Pallavaram 600 043	
Railway Colony *Tambaram* S-III-N Sundaram Colony B-N			Tambaram East 600 059	
Selaiyur S-I Madambakkam - B Meppedu - B Rajakilpakkam B-N Sitthalapakkam - B	C.O.	600 073		
Sithathur (E) EDSO-N			Polichalur 600 074	
Srinivasanagar S-I Old Perungalathur - B Srinivasanagar East B-N	C.O.	600 063		
Tambaram East - S-LSG	C.O.	600 059		
Tambaram IAF - S-LSG	C.O.	600 046		

1	2	3	4	5	6
Tambaram Sanatorium S-LSG Kadaperi B-N		C.O.	600 047		
Tambaram South S-III-N Irumbuliyur B-N Kasthuribainagar B-N State Bank Colony B-N				Tambaram 600 045	
Tambaram West S-III-N				Tambaram 600 045	
Tirusoolam (E) S-III			600 043		
Vandalur S-I Kolapakkam - B Kolathur Mambakkam - B Mannivakkam - B Melaottiyur - B Nallambakkam - B Otteri Extension B-N Ponmar (E) - B		C.O.	600 048		

Summary of Offices in all Head Post Offices

Sl. no.	*Name of the H.P.O.*	*HSG-II*	*LSG*	*Class I*	*Class II*	*Class III*	*ED SOs*	*Ed BOs*
1.	Ambattur	2	9	2	10	24	1	84
2.	Avadi Camp	-	4	2	8	10	1	36
3.	Tambaram Camp	2	4	6	5	14	4	42
	Total	4	17	10	23	48	6	162

APPENDIX - 8

Details of exchanges, their capacity, name of routes having Group Dialing Facility etc., 1992 are given under

Name of Exchange (1)	*Equipment Capacity* (2)	*Working Connections* (3)	*Waiting List* (4)
Acharapakkam	90	90	29
Ammayarkuppam	45	43	3
Arambakkam	45	43	1
Arni (CPT)	45	44	8
Arungulam	25	15	5
Athimanjeripet	25	13	1
Athipattu	25	21	1
Athipedu	88	83	4
Baluchettichatram	25	22	2
Buchireddipalli	25	14	4
Chengalpattu	800	779	288
Cheyyur	25	15	0
Chittamur	2	24	1
Chunampet	25	16	1
Edayarpakkam	25	14	1
Kalpakkam	25	13	0
Elavambedu	45	41	6
Eqvarpalayam	25	19	1
Guduvancheri	96	93	105
Gummudipoondi	600	531	34
Gunipalayam	25	22	5
Iyengarkulam	88	48	6
K.G. Kandigai	25	21	0
Kadambathur	45	44	26
Kalpakkam	400	363	37
Kanakammachatram	90	86	0
Kancheepuram	1600	1554	696
Kannigaipair	25	25	0
Karunguzhi	45	45	15
Kavaraipettai	88	66	0
Koyambedu	35	22	0
Kelambakkam	192	172	42
Madarpakkam	45	42	2
Maddur	35	31	1
Madurantakam	400	360	17

APPENDIX - 8 *(Contd.)*

(1)	(2)	(3)	(4)
Magaral	88	24	0
Mamallapuram	200	145	83
Manampathy	35	21	1
Maraimalainagar	400	382	174
Mathur	35	30	3
Mevalurkuppam	56	53	10
Meyyur	225	21	10
Minjur	200	191	139
N.N. Kandigai	45	34	1
Navalur	80	83	7
Nedumaram	25	16	3
Orathi	25	14	0
Padappai	90	83	16
Palavakkam	25	13	6
Pallipet	90	83	4
Pattraiperumbudur	56	20	4
Pavanchur	30	25	0
Perambakkam	45	39	3
Podathurpet	45	44	1
Ponneri	200	187	139
Poondi	25	14	2
Pukkathurai	45	42	11
Pulicat	25	20	2
Puliyurkandigai	45	20	6
Rajakulam	25	16	0
Salavakkam	35	32	0
Singaperumalkoil	72	66	6
Somangalam	25	20	1
Sriperumbudur	90	75	57
Sungurvarchatram	88	75	48
Sunnambukulam	45	24	1
Thirukalikundram	90	90	44
Tirupalaivanam	10	9	7
Thiruporur	88	87	17
Tirur	25	17	9
Tiruttani	300	296	153
Tiruvallur	400	378	271
Thiruvelangadu	88	54	109
Ulandal	35	31	3

APPENDIX - 8 *(Contd.)*

(1)	(2)	(3)	(4)
Uthiramerur	90	86	8
Uthukottai	90	86	21
Vellivayalchavadi	45	34	21
Velliyoor	45	34	4
Velur (CPT)	35	30	0
Vilanganur	25	19	0
Walajabad	90	88	15
Total	**9038**	**8083**	**2653**

APPENDIX - 9

Cargo Traffic at Madras Airport

(In metric tonnes)

Year	INTERNATIONAL			DOMESTIC			GRAND TOTAL
	Loaded	Unloaded	Total	Loaded	Unloaded	Total	
1.	2.	3.	4.	5.	6.	7.	8.
1972-73	537	341	878	3,374	2,174	5,548	6,426
1973-74	N.A.	N.A.	1,363	N.A.	N.A.	5,235	6,598
1974-75	933	511	1,444	3,269	1,759	5,028	6,472
1975-76	1,839	759	2,598	3,281	1,724	5,005	7,603
1976-77	N.A.	N.A.	5,447	N.A.	N.A.	7,556	13,003
1977-78	9,553	1,462	11,015	4,653	1,891	6,544	17,559
1978-79	7,132	1,801	8,933	8,329	3,118	11,447	20,380
1979-80	15,511	3,211	18,722	11,619	3,244	14,863	33,585
1980-81	11,104	2,700	13,804	11,020	5,926	16,946	30,750
1981-82	12,520	2,807	15,127	9,480	4,709	14,189	29,516
1982-83	10,145	2,645	12,790	7,657	5,531	13,188	25,978
1983-84	12,773	3,622	16,195	6,035	5,033	11,068	27,463
1984-85	14,721	5,095	19,816	6,719	5,559	11,978	31,794
1985-86	10,738	5,735	16,473	8,347	5,491	13,838	30,311
1986-87	16,972	5,448	22,420	6,968	5,601	12,569	34,989
1987-88	20,689	5,762	26,451	7,745	6,422	14,167	40,618

APPENDIX - 9 *(Contd)*

Aircraft Movement at Madras Airport

(In Numbers)

Years	*INTERNATIONAL*			*DOMESTIC*			*GRAND TOTAL*
1.	*Scheduled 2.*	*Non-Scheduled 3.*	*Total 4.*	*Scheduled 5.*	*Non-Scheduled 6.*	*Total 7.*	*8.*
1972-73	1,308	1,480	2,788	10,899*	N.A.	10,899	13,687
1973-74	1,218	156	1,374	9,180*	N.A.	9,180	10,554
1974-75	1,399	112	1,511	9,618*	N.A.	9,618	11,129
1975-76	2,000	233	2,233	10,672*	N.A.	10,672	12,905
1976-77	1,925	259	2,184	11,468*	N.A.	11,468	13,652
1977-78	2,061	355	2,396	10,342	706	11,048	13,444
1978-79	1,654	534	2,188	10,635	1,172	11,807	13,995
1979-80	2,162	750	2,912	10,131	195	10,326	13,238
1980-81	2,202	214	2,416	10,120	253	10,373	12,789
1981-82	2,305	150	2,455	9,777	362	10,139	12,594
1982-83	2,681	409	3,090	9,513	557	10,090	13,180
1983-84	2,993	109	13,102	9,186	124	9,310	12,412
1984-85	3,029	128	3,157	10,046	127	10,173	13,330
1985-86	2,971	118	3,089	9,605	32	9,637	12,726
1986-87	3,010	118	3,128	10,676	76	10,752	13,880
1987-88	56,822	2,765	59,587	98,915	1,490	1,00,405	1,59,992

*Both Scheduled & Non-Scheduled
NA - Not Available

APPENDIX - 10

Passenger Traffic at Madras Airport

(Passengers in Numbers)

Years	INTERNATIONAL				DOMESTIC			GRAND TOTAL
	Embarked	Disembarked	Transit	Total	Embarked	Disembarked	Total	
1.	2.	3.	4.	5.	6.	7.	8.	9.
1972-73	29,421	30,026	13,487	72,934	2,14,735	2,12,952	4,27,687	5,00,621
1973-74	32,632	33,563	12,743	78,938	1,98,999	1,91,964	3,90,963	4,69,901
1974-75	36,367	37,656	14,987	89,010	2,21,882	2,18,930	4,40,812	5,29,822
1975-76	42,187	44,688	22,289	1,09,164	2,37,010	2,82,742	4,65,752	5,74,916
1976-77	52,340	58,263	26,239	1,36,842	2,76,444	2,77,250	5,53,694	6,90,536
1977-78	58,593	51,990	14,897	1,35,480	3,05,787	3,06,074	6,11,861	7,47,341
1978-79	61,814	59,383	37,670	1,58,867	3,57,352	3,53,396	7,10,748	8,69,615
1979-80	85,421	84,946	28,050	1,98,417	3,76,827	3,82,262	7,59,089	9,57,506
1980-81	1,12,591	95,610	26,191	2,34,392	3,64,112	3,53,561	7,17,673	9,52,065
1981-82	1,07,649	96,928	21,478	2,26,055	4,65,068	4,44,155	9,09,203	11,35,258
1982-83	1,33,196	1,33,845	13,918	2,80,959	4,74,746	4,84,058	9,58,804	12,39,763
1983-84	1,42,578	1,51,584	54,411	3,18,573	5,01,227	5,07,770	10,08,997	13,27,570
1984-85	1,57,910	1,67,871	20,524	3,46,305	5,86,323	5,82,495	11,68,818	15,15,123
1985-86	1,82,925	1,87,270	30,005	4,00,200	6,24,373	6,30,803	12,55,176	16,55,376
1986-87	1,70,705	1,78,440	39,347	3,88,492	6,77,611	6,90,640	13,68,251	17,56,743
1987-88	32,60,116	32,62,539	14,67,912	81,00,567	58,23,394	55,81,618	114,05,012	190,05,579

APPENDIX - 10 *(Contd)*

Mail Traffic at Madras Airport
(In metric tonnes)

Years	INTERNATIONAL			DOMESTIC			*GRAND TOTAL*
	Loaded	Unloaded	Total	Loaded	Unloaded	Total	
1.	2.	3.	4.	5.	6.	7.	8.
1972-73	162	55	217	1,090	1,079	2,169	2,386
1973-74	N.A.	N.A.	179	N.A.	N.A.	2,028	2,207
1974-75	108	86	194	918	1,347	2,265	2,459
1975-76	368	154	522	1,083	1,465	2,548	3,070
1976-77	71	141	212	1,586	1,068	2,654	2,866
1977-78	242	56	298	1,027	1,733	2,760	3,058
1978-79	145	56	201	1,286	1,605	2,891	3,092
1979-80	164	54	218	1,213	2,322	3,535	3,753
1980-81	516	288	744	3,546	4,331	7,867	8,611
1981-82	185	124	309	1,886	2,223	4,109	4,418
1982-83	164	157	321	1,698	1,863	3,561	3,882
1983-84	214	261	475	1,540	1,898	3,438	3,913
1984-85	207	170	377	1,616	1,824	3,440	3,817
1985-86	200	143	343	1,590	1,748	3,338	3,681
1986-87	184	149	333	1,598	1,612	3,210	3,543
1987-88	167	193	360	1,665	1,656	3,321	3,681

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CHAPTERS - 8 & 9

MISCELLANEOUS OCCUPATIONS AND ECONOMIC TRENDS

Economy is a function of number of variables such as area, population, agriculture and allied activities, industries, transport, communications, power, trade, banking business, literacy and education, public health services, etc. A district's economy is what people make it. As per the 1981 Census, 61 per cent of the total population of Chengalpattu-MGR District was living in rural areas which is a clear indication that the district's economy is rural oriented. Like other districts, here also, agriculture continues to be the mainstay of the people.

Population Characteristics

There has been no uniformity in the increase of population from decade to decade. During 1901-1911, the percentage of increase in population was 7.09 and in the subsequent decade, it fell to 5.15 per cent[1]. Owing to a large scale depletion in the population in the year 1917-1918 consequent on an influenza epidemic, the population during the decade 1911-1921 had considerably declined.

During the decades 1921-31 and 1931-41, the rural population had increased by 8.90 and 9.02 per cent respectively; in the decade 1941-51, however a smaller increase (3.20 per cent) was noticed. The urban population had been showing an upward trend from 1921 to 1951. During the decade 1951-61 the percentage of increase was 34.22 and in the previous decade it was 39.79. The decennial population growth rate during 1971-81 was 29.26.

According to 1981 Census, the total population of the district was 36,16,508 (males 18,48,124 and females 17,68,384). The total rural population was 22,08,722 and urban population numbered 14,07,786[2]. The final population of Tamil Nadu according to the 1991 Census published by the Directorate of Census Operations indicates that the total population of the Chengalpattu-M.G.R. District (including institutional and houseless population) is 46,53,593 (males 23,74,693 and females 22,78,900 and the urban population comes to 20,88,010 bringing the proportion closer compared to the 1981 Census figures[2(a)].

Density of population

The density of population of the district per square kilometre in 1971 was 354 which was higher than the State average (316). In 1981, there was a marked variation between Chengalpattu MGR District and the state regarding the density of population. The district figure was 460 as against the State figure of 372[3]. The density of population as per 1991 Census is 588 as against the State figure of 428 per sq.km[4].

Rural and urban composition of population

There are considerable regional variations within Tamil Nadu in the nature and extent of Urbanisation, apart from the fact that the share of urban areas in total population varies from 9.4 per cent in Dharmapuri to 38.9 per cent in Chengalpattu MGR district. About 30.28 per cent or 12.45 millions of State's population resided in urban areas and the remaining 69.72 per cent or 28.65 millions lived in rural areas.

In Chengalpattu MGR district, the urban population increased by 120.46 per cent during the period 1961-1971[5]. One-fifth of the population (20.75 per cent) was urban in 1961. This increased to 34.77 per cent in 1971, which accounted for one third of the population. The reasons for this high increase in the proportion of urban population was due to the rapid progress in industrialisation in the peripheral areas around Madras City which are located within the boundaries of Chengalpattu MGR district. As per 1971 Census, the total rural population was 18,96,909 and the urban population stood at 10,10,690[6].

The percentages of rural and urban population in 1951 were 82.66 and 17.34 respectively. In 1961, the percentages of rural and urban population were 79.26 and 20.74 respectively. In 1971, the percentages of rural and urban population were 65.24 and 34.76 respectively.

Size of Scheduled Castes and Scheduled Tribes population

An important feature in the social structure is the preponderance of scheduled castes. In no other district, there is such a heavy concentration of scheduled castes.

According to 1961 Census, the State's population included 60.67 lakh of S.Cs and 2.52 lakh of S.Ts. The number of S.Cs. in the state accounted for about 18 per cent of the total population. In the district, the S.Cs. constituted more than one-fourth of the population[7]. The total S.Cs population of the district in 1971 was 7,63,991 of which rural population formed 6,12,149 and the urban population 1,51,842, total population being 29,07,599. The total S.Ts population in 1971 was 27,189, of which 23,354 were in rural and 3835 in urban. The percentage of S.Cs. to total population was 26.28. The total population of the district in 1981 was 36,16,508 while the S.Cs population was 9,47,789. Out of this, 7,32,890 were rural and 2,14,89 were urban. According to the 1991 Census of the final population of Tamil Nadu, the total scheduled caste population is 12,08,417, of which 8,96,337 are rural and 3,12,080 are urban[7a]. The total STs population was 46,050; out of this 36,874 was rural and 9,176 urban. Total ST population according to 1991 Census figures is 57,872 of which 44,998 are rural and 12,874 are urban. The total percentage of SCs was 26.2. The percentage of S.Cs. in rural and urban areas were 33.2 and 15.3 respectively. The percentage of S.Ts. population was 1.3. It was 1.7 in rural and in urban areas, it constituted 0.7 per cent[8].

Literacy Rate

The state recorded a significant increase in literacy rate during 1961-71. The literacy rate was 39.39 per cent in 1971 as compared to 31.41 per cent in 1961[9]. The total literate male population in 1971 was 9,15,488 and the literate female population was 6,15,918 bringing the total to 15,31,406. The percentage of literates to total population was 62.01.

In this district, the percentage of male literate population was 27.4 while the female literate population was 8.1 in 1951. In 1961, the percentage of male literate population was 40.2 while the female literate population was 40.2 while the female literate population was 15.1. In 1971, the percentage of male literate population was 50.7 and the female literate population was 26.7. The percentage of literate population to total population during 1951, 1961 and 1971 was 17.9, 27.89 and 39.73 respectively[10]. The total literacy rate in 1981 was 48 which was slightly higher than the State per cent of 46.8. Literacy rate in urban areas was 62.6 per cent while in rural area it was 38.7 per cent[11]. The total literacy among males was 59.7 per cent. In urban and rural areas, the literacy rates were 72.4 and 51.4 per cent respectively. Among males, the total literacy population was 35.6 per cent. In urban, it was 51.9 per cent and in rural it formed 25.7 per cent.

The total number of literate population in the district was 17,35,904. Among the literates, males numbered 11,03,788 and the females accounted for 6,32,116. The percentage of literate population of the district out of total literate population of State was 7.6[12]. The literate and educated population is 8.55 lakh of rural and 8.80 lakh of urban population and literacy rate among males and females worked out to 64 per cent and 36 per cent respectively[13].

The total literate persons according to 1991 Census (Final Population of Tamil Nadu) is 26,48,097. Out of which 12,10,388 are in rural and 14,37,709 are in urban. The male and female literates account for 15,70,277 and 10,77,820 respectively.

The district had 2306 primary schools, 543 middle schools, 157 high schools, 85 higher secondary schools, 12 under-graduate colleges, two medical colleges, five engineering colleges, five research institutions, two Oriental Educational institutions and two Industrial training institutes in 1989. There is a prominent Medical Research Institute (TAMARAI) at Porur[14].

Level of Literacy as per 1961 Census (Taluk Wise) is as follows[15]:

Sl.no.	Taluk	No. of literates per 1000 persons	No. of male literates per1000 males	No. of female literates per 1000 females
1	2	3	4	5
1.	Ponneri	201	302	96
2.	Tiruvallur	250	363	132
3.	Tiruttani	215	347	80
4.	Sriperumbudur	304	435	166
5.	Saidapet	416	544	276
6.	Chengalpattu	268	393	138
7.	Kancheepuram	288	423	152
8.	Madurantakam	2 06	316	94
	District	279	402	151

In the taluks of Saidapet, Sriperumbudur and Kancheepuram, the level of literacy has been higher than other parts of the district. In the state as a whole, the number of literates per thousand persons was 314 in 1961. Among males and females, the corresponding figures were 445 and 182. Yet the district had a low level of literacy (as per 1961 Census) in spite of its proximity to Madras.

Level of Literacy (Total, Rural, Urban) as per 1991 Census (talukwise) is as follows[16]:

Taluk name	Total	Rural	Urban
1.	2.	3.	4.
Chengalpattu-MGR District.	26,48,097	12,10,388	14,37,709
1. Gummidipoondi	59,869	57,376	2,493
2. Ponneri	1,45,735	1,13,808	31,927
3. Uttukottai	52,832	52,832	...
4. Tiruvallur	1,53,463	1,19,300	34,163
5. Tiruttani	79,562	58,085	21,477
6. Pallipattu	70,658	57,040	13,618
7. Kancheepuram	2,11,527	90,494	1,21,033
8. Sriperumbudur	3,58,220	1,26,502	2,31,718
9. Saidapet	9,86,416	1,06,470	8,79,946

10.	Chengalpattu	2,80,304	2,11,638	68,666
11.	Uttiramerur	62,012	50,083	11,929
12.	Madurantakam	1,14,699	99,137	15,562
13.	Cheyyar	72,800	67,623	5,177

The 1991 literacy figures indicate that Changalpattu MGR District is mainly rural oriented and three taluks *viz.,* Kancheepuram, Sriperumbudur and Saidapet have comparatively more literates that too in urban areas of three taluks[17]. The remaining 10 taluks have large number of illiterate people in rural areas indicating the rural character, However, the total number of literates in urban areas (14,37,709) outnumbers the rural areas (12,10,388) showing the domination of urban areas over the rural areas in respect of literacy. Village and cottage industries are prominent in the district. Apart from this, certain section of the people are engaged in other occupations.

Handicrafts and Village industries such as stone carving, goldsmithy, blacksmithy, carpentry, mat weaving, basket making, bleaching and dyeing and toy making are also popular in the district. Trading is done by a section of the people. Muslims whose occupation is trading and mat weaving are found in considerable numbers in Sriperumbudur taluk. There are a large number of people belonging to the fishermen community of Pattanavars living in Kuppams on the sea coast. Gramanis whose occupation was once toddy tapping are gradually moving to other occupations. Irulas are the only tribal people in the district. They are mainly engaged in gathering wood in the forests and working as watchmen in gardens and plantations.

The district has made vast strides in the industrial field from 1960's. Numerous industries are springing up in places lying on the outskirts of the city of Madras but within the Chengalpattu MGR District. Now, the Chengalpattu MGR District is an industrially developed area with the growth of many large, medium and small scale industries. Petro-chemical industries, automobile chassis and their components manufacturing, cycles and their components manufacturing, spinning mills, and manufacture of electrical equipments are important industries. A large number of industries are located in Saidapet taluk which surrounds Madras District. There are 2003 factories in the district which provide employment to 1,01,917 workers[18]. Of these, 27 are large factories which provide employment for more than 1000 workers each while another 43 medium range factories have employed workers ranging from 500 to 1000 each. There are 1933 small scale factories which have employed less than 500 workers each. Major industries are situated at Avadi, Ambattur, Thiruvottiyur Ennore, Villivakkam, Vandalore, Tiruvallore, Tiruvanmiyur, Padi, Guindy and Porur manufacturing wide range of products, such as tyres and tubes, cycles, tractors, automoblies, rail coaches, wagons, biscuits, matches, transformers, switchgears, etc. In the small scale sector, transport equipments, automobiles, spare parts, leather products, metal and

rubber products are produced. There are eight industrial estates in the district. A Free Trade Zone has been established near Tambaram. District Industries Centres are functioning at Kancheepuram and Guindy to promote and coordinate the industrial activities in the district[19]. The Tamil nadu Industrial Investment Corporation (TIIC) is providing term loan assistance for the promotion of industrial activities besides extending these facilities also to transport operators and others. The Atomic Power Plant at Kalpakkam, the Oil Refinery at Manali, the Madhavaram Milk Project, all are and, up to the importance of the district[20].

Power

All villages in the district are electrified[21]. The most significant development in the field of power industries is the establishment of Atomic Power Plant at Kalpakkam with an installed capacity of 470 KWH and Ennore Power Plant with an installed capacity of 450 KWH. The *per capita* consumption of power in the district is estimated at 182 units. The district had 9,72,15,054 units in Low Tension line, 10,31,15,300 units in High Tension line and 44,14,25,160 units in agriculture.

Banking System

Banks are playing a significant role with the efforts of the State Government in bringing about a transformation in the economy. Tamil nadu is one of the leading states in the country with a good banking infrastructure.[22] As at the end of March 1990, 254 branches of Commercial banks are functioning in the district. These commercial banks cater to an average population of 14,280 in the district. Indian Bank is the Lead Bank in the district. Besides Commercial banks, there are 26 branches of the District Cooperative Bank and 15 branches of the State Land Development Bank which cater to the credit needs of the agriculture sector of the district. Besides, 365 primary agricultural cooperative banks are functioning. To meet the credit needs of industries and services, M/s. Tamil Nadu Industrial Investment Corporation Ltd. (TIIC), Tamil Nadu Industrial Development Corporation (TIDCO), and SIPCOT also supplement through term loans in the district[23]. The activities of these Corporations have been dealt with in detail in the chapter on "Industries", while those of Bank in the chapter on "Banking, Trade and Commerce".

Lead Bank Scheme

The Lead Bank Scheme was introduced in 1969. It targeted banking development through branch expansion and through implementation of District Credit Plans and block-wise, schemewise credit expansion. In the district, Indian Bank which is the lead bank, plays a vital role in all round economic development.

Network of the branches of the Commercial banks increased from 244 to 253 by the end of September 1989, which comprise 139 rural, 70 semi urban and 44 urban branches[24]. The total deposits of these 253 branches aggregated to Rs. 478.64 crore as at September 1989 compared to Rs. 434.42 crore as at March 1989, showing an increase of Rs. 44.22 crore or 10.20 per cent. The total credit rose to Rs. 456.60 crore at the of September 1989 registering an increase of Rs. 15.54 crores over the March 1989 figure at Rs. 441.06 crore. Credit Deposits ratio was at 95.40 per cent at the of September 1989. The total advances under priority sector amounted to Rs. 271.56 crore as on 30th September 1989 as against Rs. 264.08 crore at the end of March 1989 with an increase of Rs. 7.48 crores. The percentage of priority sector credit to total advances worked out to Rs.59.47 per cent compared to 59.87 per cent as on 31st March 1989.

Demographic Characteristics (1981)

The total area of the district as per 1981 Census was 7,863 sq.km., covering a population 36.17 lakh. The density of population was 457 per sq.km. in 1981 while it is 588 in 1991. The percentage of urban population to the total population of the district was 39 which was larger than the State's urban population *viz.,* 32.98 per cent The Scheduled Castes are largely concentrated in the district. The percentage of Scheduled Castes to the total population of the district was 26 per cent as against the State's percentage of 18.37 in 1981. The percentage of Scheduled Tribes was only one per cent in the district. The Scheduled Castes constitute a higher percentage of rural than urban population in the district[25].

Sectoral Distribution of Workforce

Economic development is associated with shifts in the sectoral allocation of the workforce which, in turn, is related to shifts in the production structure. Development accompanied by a progressive diversification of employment structure, reflected in a fall in the share of the primary sector and a rise in secondary and tertiary activities.

Distribution of Workers (Males and Females) in Household Industry

The total number of male workers in household industry in 1961 was 55,600 which increased to 60,400 in 1981. The total number of household industry female workers in 1961 was 25,900 and this figure increased to 18,300 in 1981[26].

Roadways

The district is well connected by roadways. Total length of roads maintained during 1989 by National Highways was 213 km. by State Highways 241 km, by Municipalities 858 km, by panchayat union 1040 km. and by pachayats 210 km. It is significant that most of the major villages are connected by road transport. MGR and Pallavan Transport Corporations

take major share in plying buses in the district[27]. Registered motor vehicles both commercial and non-commercial are given in *Appendix-1*.

Railways and Airways

The metre gauge and broad gauge railway lines of Southern Railway pass through the district to the total length of 244.85 km. and there are 60 railway stations located in the district. Metre gauge railway line runs from Madras towards south and two broad gauge lines one towards north and the other towards west are passing through the district.

The International and Domestic Airports (Terminal) named after Anna and Kamaraj respectively are located in Saidapet taluk. They add sigificance to the district.

More details about roadways, railways and airways are given in the chapter on *Communications*.

Petrol Bunks

There are 293 petrol bunks spreading over in 122 places in the district. The Poonamalle Panchayat Union has more petrol bunks numbering 10 followed by Villivakkam Panchayat Union which has seven. This is mainly attributed to the location of a Commercial Tax Department Checkpost at Poonamallee coupled with the junction of three major roads *viz.,* Bangalore Naional Highways road, Mount-Poonamallee road and Poonamalle High Road (Now E.V.R. Periyar High Road). Villivakkam forms part of Madras territory[28]. St. Thomas Mount, Puzhal and Tiruttani have equal number of petrol bunks numbering four each. Other panchayat unions have a minimum of three or less than three.

Housing

There were 4,75,075 houses in the district in 1960. Of these, 3,81,165 (*i.e.* 80.23 per cent) were found in rural and 93,910 (or 19.77 per cent) in urban areas. The proportion of rural and urban population in the district was 79.25 per cent and 20.75 respectively; the distribution of Census Houses and population between rural and urban sectors followed more or less the same pattern. Out of every 1000 Census Houses in the district, 44 were vacant and 956 occupied. Out of the occupied Census Houses, 897 had pure or mixed dwellings. The remaining 59 were used as non-dwellings such as shops, factories, hotels, schools, places of entertainment, public health institutions, etc. Out of 897 dwelling 875 were used as pure dwellings, seven as shop-*cum*-dwellings and 15 as workshop-*cum*-dwellings[29].

The distribution of non-dwellings was as follows: Shops 17, Workshops and factories eight, Educational Institutions four, Restaurants three, Hotels two, Business Houses and Offices 22, Places of entertainment one, Public Health Institutions one, others 21.

As at present, the vacancy of houses varies to a greater extent in Ponneri, Chengalpattu, Saidapet and Tiruttani taluks from that of the district. In case of Chengalpattu taluk, the disparity is noticed only in the rurual sector. In case of the other three taluks, the disparity is noticed in both the rural and urban sectors. The low proportion of vacancy in Ponneri and Chengalpattu taluks is compensated by a fairly larger proportion under dwellings. Similarly, the high proportion of vacancy in Tiruttani and Saidapet taluks is compensated by low proportion in dwellings. Besides, Tiruttani has recorded low proportion in shops while Saidapet in workshop-*cum*-dwellings.

In regard to occupied houses, Tiruttani taluk recorded a very high proportion of workshop-cum-dwellings while Kancheepuram recorded so in regard to shops, workshops and factories and Saidapet in regard to shops alone. Tiruttani recorded low proportion in shops, while Madurantakam in regard to shops, factories, workshops and workshop-*cum*-dwellings and Tiruvallur, Sriperumbudur and Saidapet in workshop-*cum*-dwellings alone. The distribution of occupied houses in other taluks has fallen in line with the district pattern.

Material of Wall and Roof

The quality of a house is, to a large extent, determined by the material used for its construction either on the basis of the number of people who have to reside in it or on the basis of the use to which the Census House is to be put. More so is the case with the census houses which are used as dwellings. As such, any improvement in the economic standard of the owner is reflected by his desire to use better quality material in the construction of his house both for wall and for roof.

Distribution of 1000 households living in census houses used wholly or partly as dwellings by predominant material of wall. A comparative picture of state and the district is given in *Appendix-2.*

Distribution of 1000 households living in census houses used wholly or partly as dwellings by predominant material of roof. A comparative picture of the state and the district is tabled in *Appendix-3.*

Mud, burnt bricks and stone are the most important wall materials used both at the state and district level. Among the mud, burnt bricks and stone materials, the people of the district prefer mud walls rather than their counterparts in other districts who prefer burnt bricks and stones. The rural sector of the district recorded an increased proportion in regard to burnt bricks. In all other cases, the district proportion is less than that of the state.

Grass, leaves, thatch, etc., account for more than 70 per cent of the roof materials in the district. This proportion is far in excess of the state per centage of 57.9 and in fact, Chengalpattu MGR District is next to Thanjavur and South Aroct districts. No material except thatch has recorded higher proportion in Chengalpattu MGR district than for the state as a whole. Even

though the district did not keep pace with the state in the usage of tiles, it is the second material of importance in the district. Chengalpattu MGR District signifies a preference for mud walls and thatched roof. However, in the urban sector, tiles are the chief roof material and burnt brick walls are of equal importance if not more.

The distribution of 1000 households living in census houses used wholly or partly as dwellings by predominant material of wall and roof material. Talukwise details are given in *Appendices 4 and 5.*

In all the taluks except Saidapet, more than 60 per cent of the houses are constructed with mud walls. Ponneri records the highest percentage of 84.6 followed by 85.3 per cent in Madurantakam.

Burnt brick is the second predominant material in the district. Saidapet records the highest proportion of 307 followed by Kancheepuram 288, Chengalpattu 239 and Tiruttani 224.

Compared to other taluks, Sriperumbudur and Saidapet have recorded higher proportion of stone walls. These are the only two taluks which have recorded some figures in grass, leaves, reeds or bamboo. Unburnt brick has a significant proportion in Kancheepuram and Tiruttani taluks and cement concrets in Saidapet. On the whole, Saidapet taluk tops with about 37 per cent of the houses either with stone or burnt brick as wall meterial, followed by Sriperumbudur and Kancheepuram both at 30 per cent each.

Roof Material

More than 60 per cent of the houses in all the taluks except Kancheepuram use thatched roofing. Madurantakam and Ponneri taluks have the highest proportions of 853 and 832 respectively. The lowest proportion are noticed in Kancheepuram 534, Saidapet 617 and Sriperumbudur 645. These taluks have recorded the highest proportions of 419, 286 and 319 against tiles. Saidapet has also recorded high proportion against brick and lime, concrete and stone slabs and asbestos and Kancheepuram against brick and lime. It is assumed that more number of houses with walls built of burnt brick and stones, and less number of houses with *kutcha* roof are indicators of economic prosperity. Saidapet, Kancheepuram and Sriperumbudur are the taluks where the conditions of housing are better.

Households break up by number of rooms

Any house which does not provide accommodation at the rate of one room for every two persons is treated to be overcrowded. The average size of a household in Tamilnadu is 4.62. As such, a house with three rooms provides sufficient accommodation for a family in Tamilnadu. If a place has very large proportion of houses with less than three rooms, it is considered as backward[30].

Households in occupation of 'no regular room' and one room, *prima facie* suffer from poor accommodation. Twenty-four out of every 1000 households in the rural areas of Chengalpattu MGR District occupy no regular room as against 47 for the state. Regarding one roomed houses, the district records a proportion of 695 as against 676 for the state. Combining the two cases of 'no regular room' and one room, the proportion of the district works out to 710 as against 723 for the state indicating that the rural sector of the district is slightly better than the state in regard to accommodation facilities.

In the urban sector, the district records a combined proportion of 557 households with 'no regular room' and one room as against the State proportion of 609. Here again, the district enjoys a better position than the State.

Households occupying two rooms are generally the pattern of housing found among the lower middle class people of the state. In Tamil Nadu, 187 households out of 1000 live in two rooms. In the rural areas, the proportion is only 176 while in urban areas it is 217. As against these State proportions, the proportions for the district works out 192, 181 and 237 in total rural and unban areas respectively indicating a higher proportion than the State. The rural proportion falls below the urban proportion indicating that the conditions of housing found in the urban sector are better than those in the rural sector.

Households in possession of three rooms and above are assumed to have adequate accommodation for a comfortable living. In this assumption, in 1961 Census the rural areas of the district have been assigned the sixth rank with a proportion of 83 households living in three rooms and above out of every 1000 households, which is slightly less than the State average of 84. In the case of urban, the district gets the fifth rank with a proportion of 189 out of 1000 as against the State average of 169.

The proportions of households occupying three and more roomed houses per 1000 households are indicated in *Appendix-6.*

The disparity between the rural and urban sectors is small in the taluks of Madurantakam, Tiruttani and Kancheepuram and large in Chengalpattu and Sriperumbudur. Tiruvallur, Saidapet, and Ponneri taluks have better accommodation both in the rural and urban sectors. The overall average size of household for the state was 4.62. The corresponding sizes for the district were 4.69, 4.68, and 4.72 respectively. The district has recorded bigger size of household in the rural sector and a smaller size of household in the urban sector. The sizes of households within the district distributed are given in *Appendix - 7.*

Ponneri and Kancheepuram taluks have recorded smaller size of households both in the rural and ruban sectors. Tiruvallur and Tiruttani are conspicuous by recording smaller size of households in the rural sector but bigger size in the urban. Other taluks have recorded bigger size of households

than the district. Another interesting feature is that the size of urban households is bigger than that of rural except in Saidapet, Kancheepuram and Madurantakam taluks.

The average number of persons living in a room is more in the district than in the state indicating that the district is a more congested one. Similarly, a gap between state and district is noticed in the case of houses with five rooms and above. The fluctuation of average within the district is more than that of district and state. The general overcrowding is more marked in Ponneri, Tiruvallur, Tiruttani and Madurantakam taluks. Average number of persons per room in each category of house is tabled in *Appendix-8.*

Census houses and the uses to which they are put as per 1981 Census are tabled in *Appendix-9.* Households classified by number of members and by number of rooms occupied as per 1981 census are given in *Appendix-10.*

According to the Census of India 1991 there were 983,062 occupied residential houses of which 553,687 are in rural and 429,375 are in urban. The total number of households in the district is 1,008,250. The number of households in rural and urban areas are 561, 643 and 446,707 respectively[31].

Urban Development

As the district is very close to the city of Madras it shares in the propriety arising out of the rural development. The high density of population in the Madras city (21811 per sq.km. in 1991) coupled with the limited scope for further expansion, a large number of new residential colonies and industrial houses have now sprung up in the suburban areas like Avadi, Ambattur, Tiruvothiyur, Madhavaram, Pallavaram and Tambaram[32]. The extension of urban influence of Madras in the neighbouring areas of Saidapet taluk, which encircles Madras, has resulted in turning the bulk of the population of this taluk as urban (85 per cent urban), leaving only 15 per cent as rural population. This taluk has 32 towns which are the constituent units of the Madras urban agglomeration. The neighbouring Sriperumbudur taluk, which also has 16 constituent suburban centres of the Madras urban agglomeration, has over half of its population in the urban centres.

The details of the urban agglomeration centres are given in *Appendix-11.*

The Madras Urban Agglomeration which consists of the core city of Madras and also 56 other contiguous towns including Avadi, Ambattur, Thiruvottiyur, Alandur, Pallavaram, Tambaram, etc., has registered a growth rate of 24. 99 per cent during the decade 1981-91. In actual numbers the population of this big Urban Agglomeration which is 53,61,468 has increased by 1.07 million in the last 10 years[33].

Occupational Pattern

The occupational pattern of people (as per 1981 Census) reveals that half of the district's population is engaged in agriculture (cultivators constitute 20.72 per cent and agricultural labourers form 29.60 per cent of the population) People engaged in household industries are 5.68 per cent[34]. Marginal workers and other workers constitute 8.66 per cent and 35.34 per cent of the working population respectively. There are 4,41,662 land owners occupying an area of 4.43 lakh hectares and they cover above 62.54 per cent of the total land. The occupational pattern of people as per 1981 Census is given in *Appendix-12.* From the analysis, it is clear that the small and marginal farmers are in large numbers. The size of land holdings, number of land owners and the area in each category are tabled in *Appendix-13.*

Irrigation plays a vital role in the agricultural development. Irrigation sources comprise wells, canals and tanks. The gross area irrigated is 3.49 lakh hectares. The major crops grown in the district are paddy, groundunt and sugarcane.

Pattern of Food Consumption

The pattern of food consumption in Tamil Nadu was different from that in other states in 1961-62. To ascertain the food habits of the people in different regions and to determine the level of consumption, the State was divided into three zones *viz.*, 'rice zone', 'mixed zone' and 'millet zone'. Rice zone consisted of all towns and villages in which the staple food was rice. Millet zone consisted of villages where the staple food was millet. The areas which took rice and millet in different proportions were classified as mixed zone. 'Census block' formed for the 1961 Census had a population ranging from 600 to 800. It generally consisted of 120-150 households. One per cent of such blocks was selected at random for the survey. From each block, 10 per cent of the households in the mixed zone and five per cent each in the rice and millet zones were selected as sample households. The study was thus based on the household as a unit[35].

The cereals are the cheapest food available. Poorer people prefer less expensive millet to rice. The cereals grown and consumed in the state are rice and millets like cholam (jowar), cumbu (bajra) and ragi. Millets are consumed by the labouring class and rice by all people. Ragi is the most popular millet in the district. Varagu, cumbu and cholam come next. People of the district prefer to take ragi and cumbu as diluted gruel. Hard working labourers engaged in agriculture on allied activities take gruel with pickles or chillies in the morning as well as at noon and a meal of rice and sambar in the night. At times, cold rice is taken for breakfast. The people who are better off take gruel in the morning and rice at noon and night. The percentage of rice production to total cereal production in the district in 1961 was 89 per cent whereas the percentage of rice meals to total meals taken was 73 per cent.

The agriculturists in the district like their counterparts in some other districts perfer to sell paddy and eat millets, as they are economically backward. Among millet eaters, the millet grown extensively in the local area influences the habits of the people. The influence of local production is felt more on the rural people and less on the people in the urban pockets embedded in those areas. The food habits of urban people are governed by other considerations[36].

Chengalpattu MGR is a coastal district. The percentage of households taking three or more meals is smaller. Only 30 per cent of the people undertake cooking once daily; 55 per cent of the people cook twice daily and 15 per cent of the people cook three or more times daily. Non-working cultivators, money lenders, highly paid officials, mill owners etc., consume more rice and represent the highest stratum of society. They generally lead a sedate life. Among the working cultivators and agricultural labourers, the diet is determined by season. During paddy harvest, they take rice. During the period of millet harvest and in lean months, they take millets. They are generally mixed diet eaters. Among the village artisans and small traders, a slightly increased percentage of rice eaters is found which reflects their increased purchasing capacity. Industrial workers, mechanics and electricians are found in urban tracts and many of them consume rice. Mostly, weavers prefer rice, because rice gives them Kanji or decanted starch which can be used for stuffening the yarn. Generally the highest percentage of rice eaters is seen in urban areas and among the educated class.

Purchasing Capacity

The purchasing, capacity of the people influences a preference for rice as against millet. One can choose between millet and rice when both are freely available in the market. But even under such circumstances people in lower income group, prefer only millet though they may relish rice better. No side dish is normally consumed with the millet meal, but rice meal requires a *Kuzhambu rasam* or butter milk. So the rice meal is costlier than millet meal. This factor influences people in the lower income group in their food habits. Whenever their purchasing capacity improves, they prefer to go in for more and more rice. For millet eaters, rice is an item of luxury. In the district, 90 per cent of the households take cereal meals three times daily and 10 per cent of the households take cereal meals only twice a day. In cold seasons 30 per cent of the households cook once daily, 55 per cent cook twice daily and 15 per cent cook three or more times daily. 96 per cent of the households take boiled rice, 20 per cent boiled as well as raw rice and two per cent only raw rice.

Migration

Morethan 40 per cent of migrants moved into Madras city from Chengalpattu MGR District during 1901 and 1911. But during 1921, the

percentage was slightly less *viz.,* 36 per cent. Among those who migrated from other districts of the state, migrants from Chengalpattu MGR District were most numerous and they accounted for 33 per cent of the total migrants from within the state.

Inter district migration is from rural to urban while inter-state migration is from urban to urban. (Chengalpattu MGR District sent maximum number of illiterates to Madras city. Taking higher education, the degree holders from the Chengalpattu MGR District also migrate to Madras city.) People in the distant rural are migrants to nearest urban area. In this case, Chengalpattu MGR district which surrounds Madras, sent 108,061 persons from rural areas and only 41,615 persons from urban areas during 1961[37].

The duration of residence of migrants to Madras city from Chengalpattu MGR district during 1961 was as follows[38]:

Sl.no.	*Less than one year*	*1-5 Years*	*6-10 years*	*11-15 Years*	*16 years*
1.	Rural 5.6	21.2	21.1	15.8	35.0
2.	Urban 7.0	20.9	20.1	17.5	32.3

Rural - urban flows of Income, Savings and Investment

A pilot study for Indian Council of Social Science Research was undertaken in 1987 by the Institute for Techno Economic Studies, Madras for measuring income, savings and investment. The study covers Saidapet and Madurantakam taluks for the Rural Survey and the Kancheepuram and Tambaram towns for the urban survey. The details of the study are given below as under:-

The macro data pertaining to the Tamil Nadu economy reveals that the state income from agriculture in 1970-71 was Rs. 90,456 lakh and the number of agricultural workers, cultivators and agricultural labourers was 90-98 lakh which gave them an average per worker income of Rs. 994/-. In 1981 the income from agriculture was Rs. 1.33,503 lakh and the number of workers 115.96 lakh yielding an income per worker of Rs.1151/-. In 1985, income from agriculture was Rs. 2,67,750 lakh and the *per capita* income for Tamil Nadu in 1984-85 was Rs. 2070. The income per agricultural worker rose by 7.32 per cent between 1971 and 1981, and again by 28.64 per cent between 1981 and 1985[39].

The Households

Forty eight samples in the Rural Low Income Group *i.e.* income below Rs. 12,000/- were chosen. Of these, 25 were agricultural labourers, eight small farmers, seven carpenters, two teachers, five artisans and the remaining one was a public transport worker samples in the Low Income Urban Group and 54 samples of Lower Middle Income Rural Group were selected.

The Low Income Urban group consists of employed weavers, hawkers, construction workers, vegetable seller masons, tea stall owners, petty shop keepers, artisans, watchman, cook, dhobi, hotel workers, truck driver, carpenters, rickshaw wallah, typist and attenders. The Lower Middle Income Rural Group consists of small farmers, carpenters, tinkers, clerks, bank workers, school teachers, mechanics, transport drivers and conductors whose annual income ranges from Rs. 12,000/- to 24,000/- sixty one Lower Middle Income urban samples were selected. Twenty eight samples of Upper Middle Income Rural Group and 31 Upper Middle Income Urban samples were chosen. Whose income ranges from Rs. 24001 to 36000/-. The High Income Rural group consisted of 20 big farmers. The 14 High Income Urban group included master weavers, and advocate, a big farmer, surgeon, S.B.I. officer, professor etc. A brief analysis of the assets of rural and urban households is given as under:

Assets - Rural

The per capita assets of the Rural Low Income Group amount to Rs. 7,454/-. Over 43 per cent is in the form of residential buildings of which 21 per cent is the highest for any in the form of land. The share of livestock is 12 per cent, the highest for any group. Consumer durables companies comprise 8.5 per cent and gold jewelleries accounts for 6.22 per cent.

The lower middle income category has per capita assets of Rs. 28,237[40]. Here land value goes up to 40 per cent while buildings account for 31.4 per cent while livestock value is reduced to 3.7 per cent. The value of gold jewelleries is more than three times that of the Low Income Group, but as a percentage of total assets it is 5.45 per cent.

The Upper Middle Income Group has per capita assets of over Rs. 58,000 *i.e.* over double that of the lower middle income group. Land value increases to 49.24 per cent while building accounts for 21.9 per cent. Consumer durables and farm equipment are nearly equal at over 7 per cent. Gold jewelleries account for 3.79 per cent of total assets, while its value per capita is about Rs.2,400.

The High Income Group has assets, per capita, value at over Rs. 1,10,000. More than half of the total assets is in the form of land (54.5 per cent), while buildings account for 15.7 per cent farm equipment comprises 10.4 per cent. The Rural High Income group is the only one with financial assets valued at about Rs. 10,000 on average. Gold accounts for just 2.16 per cent of assets in actual value and it is about the same as for the Upper Middle Income category. All groups have some gold, the percentage share coming down with each higher group, while the amount spent rises progressively. The same is the case with consumer durables. Assets composition of rural households is given in *Appendix-14.*

Assets - Urban

The per capita assets of Urban Low Income Household are considerably lesser than that of the rural and amount to Rs.5,828/-. The bulk of it is accounted for by residential buildings, whose value is 70 per cent of the total value of assets. Consumer durables account for nearly 12 per cent and gold jewelleries for 91/2 per cent of total assets. Financial assets amonut to 3.70 per cent of which business investment accounts for 2.65 per cent.

The Lower Middle Income group owns assets worth Rs. 24,000/- per capita. The value of residential buildings comes down to 48 per cent. But, consumer durables account for 14 per cent while financial assets and gold comprise over seven per cent each. Business investment is of the order of 9.33 per cent while there are agricultural land holdings to the extent of 6.33 per cent and urban land nearly four per cent.

As for the upper Middle Income group, their assets amount to Rs. 37,000 per capita, with building valuing at 441/2 per cent consumer durables 14 per cent, financial assets and agricultural land at 9 per cent, business investment eight per cent, gold seven per cent and urban land five per cent.

The per capita assets of the High Income group amounted to about Rs. 50,000, of which residential buildings comprised 36 per cent, financial assets 14.5 per cent, consumer durables 11 per cent and business investment 10.5 per cent, agricultural land was to the extent of 91/2 and gold jewelleries six per cent.

Overall urban assets were largely in residential buildings amounting to nearly half of the total assets. Consumer durables were next in importance accounting for 13.25 per cent while financial assets and business investment accounted for about 9 per cent each, and agricultural land and gold jewellery amounted to over 7 per cent each. In the case of rural households, it was agricultural land which accounted for nearly half the total assets, and residential buildings which accounted for 23 per cent. Consumer durables and farm equipment amounted to about 71/2 each. Assets comprising of urban households and total, average per capita assets are given in *Appendix 15 and 16.*

Income Sources - Rural

The Low Income household has an average income of Rs.9093/-. Wages comprise nearly 50 per cent while livestock brings 15.4 per cent and salaries account for 14.7 per cent. Income from agriculture amounts to 9.7 per cent. The per capita income works out to Rs. 1873/-.

For the Lower Middle Income group, average Income is Rs. 17,032/- of which salaries account for 47.7 per cent and agricultural income for 29 per cent. Wages are of course, insignificant, while rent amounts to 7.3 per cent and profits to 5.7 per cent. The per capita income is nearly double that of the Low Income group and it amounts to Rs.3,657/-.

The Upper Middle Income group gets 59 per cent of its income from agriculture, while rent and salaries account for 18.2 per cent each. The average income is Rs. 29,193/- while the per capita income works out to Rs. 5,206/-

The Income of the High Income category is Rs.62.260/- of which agriculture accounts for 70.4 per cent and rent for 16.7 per cent while profits comprise 5.3 per cent. The per capita income is high at Rs. 11,530/-. Sources of income among the rural households are given in *Appendix-17.*

Urban

For the Urban Low Income group profits form 44 per cent of the income, (mostly self employed hawkers, vegetable sellers, rickshaw-men etc.) wages 42.5 per cent and salaries 11.9 per cent of the average income of Rs. 8,211/- The per capita income of Rs.1,942/- is higher than that of the rural Low Income group.

For the Lower Middle Income group average Income is Rs. 18,144 which consists of profits 54.45 per cent (carpenters, flour mill owners etc.) and salaries 29.45 per cent. Wages form a very small percentage. The per capita income of this group *viz,* Rs.3,981/- is higher than that of its rural counterpart.

For the Upper Middle Income group, the average income of Rs.28,748/- accrues largely from business profit, it accounts for 45.4 per cent, salaries 36.23 per cent, agricultural income 7.4 per cent. The per capita income at Rs.5,731/- is higher than that of the rural group.

For the High Income category, the average income of Rs. 47,508/- arises largely from business profits which works to 44 per cent and salaries 38.5 per cent. Agricultural Income comprises 11.5 per cent while Interest on Investment 1.8 per cent. This is the only group where the urban per capita Income is considerably less than that of the rural, and amounts to Rs.8,527/-. Sources of income of urban households and Income of Rural and Urban (total, average, per capita) are given in *Appendices 18 and 19.*

Here is a comparative study of Private Final Consumption Expenditure in the Domestic Market at current prices as in 1970-71 and 1983-84.

	Percentage Distribution	
	1970-71	*1983-84*
Food	68.4 per cent	59.8 per cent
Clothing & Footwear	7.1	10.00
Rent, Fuel & Power	7.0	7.1
Furniture, & Household equipment	3.0	4.2
Medical care & Health	2.0	1.9
Transport & Communication	5.0	10.4
Recreation, Education, Entertainment and Cultural Series.	3.7	2.8

The above statement will very well reveal that there is a marked decline in food expenditure during the decade upto 83-84, and an increase in expenditure on clothing, footwear, and transport and communication.

In the sample study, the next large item of expenditure after food item, comprises rent, fuel and power, which constitutes about 16 per cent for the first three groups, though the actual amounts keep rising for each higher group. For the High Income Group, this item constitute 12.7 per cent and the amount is very close to the expenditure of the upper middle group. Clothing and footwear constitute over 11 per cent for the lowest and highest groups, while for the two middle groups it is nearly 14 per cent. The High Income Group spends 17.3 per cent on education, while the two middle groups spend some 8 per cent or so. The Low Income Group spends only about 4 per cent on education, since they avail of 'free' education. Medical expenses form practically the same per centage of two per cent or so for all groups and so do recreation expenses, the High Income category spending rather more. Intoxicants account for a significant percentage of low income expenditure being 6.6 per cent. The expenditure on intoxicants is less than two per cent for both the middle income groups and over two per cent for the high income group. Travel accounts for 4 to 5 per cent of the total expenditure.

It may be seen therefrom that the shortfall in food expenditure, as compared to the All India figures, is made up by increased expenditure on rent, fuel and power, education, clothing and travel.

The Upper Middle Income group seems to spend comparatively more than expected on various items, the actual amount in some cases being equal or nearly equal, to the amount spent by the High Income group.

Household Consumer Expenditure Patten - Urban

The urban expenditure on food is higher than that of the rural, and the actual amount spent is also higher, because of higher urban living costs.

The Low Income group spends nearly 50 per cent on food, the lower middle 43 per cent and the next two groups, 38 per cent. Rent, fuel and power account for a comparatively high percentage of urban expenditure, being 18.5 per cent for the Low Income group. The other substantial item is clothing and footwear, which rises progressively from 9.4 per cent for the Low Income group to 12.6 per cent for the High Income group. The expenditure on education also rises from 4 per cent for Low Income to nearly 9 per cent for the highest group. Medical expenses comprise 2 to 3 per cent for all groups. The Low Income group spends nearly 9 per cent on intoxicants and the other groups 381/2 to 5 per cent. For ceremonies and festivals, the expenditure percentage rises progressively from 2.7 per cent for Low Income to 7.74 per cent for High Income group.

It appears from the tables that average rural income and expenditure are generally higher than urban except for the lower middle income group on the other hand per capita terms High Income group, income for the other categories is higher than for the urban households. Similarly, per capita household consumption expenditure is higher for the two low income urban groups and lower for the two higher income urban groups.

In the Low Income Rural group, majority are agricultural labourers with more than one earner per family. Further, during the off season, a number of them work in the rice mills in urban area and supplement their income. A large number also get a singificant portion of their income from livestock-an item which has gained importance owing to the various schemes such as IRDP and the more recent rural loan Melas, which provide loans for purchase of cattle. There are also carpenters and other artisans whose income has been showing an upward trend during the past few years. The low income group urban, on the other hand includes hawkers, milk vendors, potters etc. whose income is fairly low. But, owing to the slightly smaller size of families, the per capita income and expenditure are higher. However, in spite of lower average income of the urban group, they have a higher propensity to save. Almost everybody tries to save for educating children or for daughter's marriage or to buy some consumer durables. Now, almost every family has a radio or transistor, a few pieces of furniture and some stainless steel, vessels etc. Pattern of expenditure among rural households, urban households and total average and per capita expenditure are tabled in *Appendices - 20, 21 and 22.*

Rural

An account of Assets, Gross and Net Income, Farm and Business expenditure, Household consumer expenditure, Savings, Investment etc., in regard to low income, lower middle income, upper middle income, and high income in rural areas analysed is given below.

Assets as well as incomes, both gross and net expenditure on farm, non-farm and business transactions, household consumer expenditure, savings, physical and financial investment, disinvestment, borrowing and capital transfers of various rural groups are shown in *Appendix-23.*

Taking the total assets of the Low Income Rural group, it is seen that they range from Rs.7,155/- to Rs.1,32,570/- the difference arising out of the nature of economic activity and to some extent, the amount of inherited property. In the case of the Lower Middle catergory, the range of assets is from a low Rs.8730/- to a high of Rs. 4,03,650/- The lower range of assets usually belong to the agricultural labourers. The average assets vary from Rs.36,182/- for the Low Income to Rs.1,31,512/- for the Lower Middle, indicating a sharp rise in asset holding. As to the Upper Middle Income group, their assets range generally from Rs.2 lakhs to Rs.4 or 5 lakh the average assets being Rs.3,25,422/-. There are about five households owning assets of Rs.1 lakh or less, two of them having only Rs.25000/- and Rs.3[illegible]000/-. And in the case of the High Income group, there is a jump in average assets to the tune of Rs.6,00,914/- with differences ranginng from Rs.2.5 lakh to Rs. 9.8 lakh. The high figures of assets of all groups may be attributed to agricultural land values, which have been pushed up by inflation, and which amount to 50 per cent and more of the total. Residential buildings also contribute largely to the assets to the extent of about 25 per cent.

Gross Income from all sources amounts to Rs.11,310/- on average for the Low Income group, Rs. 24,413/- for the Lower Middle, Rs. 53,757/- for the Upper Middle and Rs. 1,09,816/- for the High Income Groups. While the Low Income group derives most of the income from wages and livestock, the other groups depend largely on agricultural operations. Expenditure on farm, nonfarm and business accounts, amounts on an average to Rs.2,218/- for the Low Income group, and is largely on account of livestock. For the Lower Middle group, the above expenditure averages Rs.7,318/- and it ranges from Rs.73/- to Rs.39,805/-. The Low expenditure of Rs.1,000/- and less is on account of artisan's expenses and livestock expenses of agricultural labourers. The higher expenditure comprises mostly farm business. Unlike the Lower Middle Income group, the Upper Middle Income group does not present sharp differences in farm and business expenditure which average Rs. 24,564/-. Most of them are agriculturists while a few are professionals. As to the High Income group, they are almost big farmers and their average farm expenditure of Rs.47,555/- covers a fairly wide range between Rs.20,000/- and Rs.84,000/-. The differences are due to the extent of holdings and intensity of agricultural operations.

The average assets of the Urban Low Income group amounting to Rs.24,637/- are comparatively lesser than that of the rural category, and similarly, the per capita assets are also lower. However, there is no such a

wide range of difference within the group. The urban range except for one or two instances, is between Rs.5,000/- and Rs. 53,000/- with the majority around Rs. 30000/-. The very low figures belong to casual labour in the informal sector, while the higher figures denotes artisans, employed weavers etc. Residential buildings comprise the most important asset, accounting for 70 per cent of the total, while consumer durables and gold account for 12 per cent and 9.5 per cent respectively.

The Urban Lower Middle Income group has assets worth over Rs.1 lakh and here, there are considerable differences in the amount of assets, which range from Rs.8,500/- to Rs.3,30,000/-. The low figures as in the case of the low Income group belong to those in the informal sector and wage earners. Here again, the main item of assets is residential buildings to the extent of 50 per cent, while consumer durables, business, investment, gold and financial assets make up the balance. The average assets of the Upper Middle Income group amount to Rs.1,85,740/- and they range from Rs. 27,000/- to Rs. 4,25,000/- The larger assets usually belong to professionals and small businessmen. Residential buildings account for 45 per cent of the assets while agricultural land nine per cent. The residue is spread over the same assets refused to in the Lower Middle Income categor The High Income Urban group has average assets of Rs.2,82,800/- and they range from about Rs.1 lakh to Rs.8.5 lakh. The value of residential buildings is a little less than 40 per cent of the total assets, and the balance is spread over financial and physical assets including consumer durables and gold jewellery.

Gross Income of the Low Income Urban group amounts to Rs.9690/- on average and that of the Lower Middle category averages Rs. 52,700/- The Upper Middle group receives on average a gross income of Rs.74,400/- while the High Income group receives only Rs.69,406/- on average. (The reason for the shortfall in High Income gross receipts is that nearly one half of the sample consists of professionals who have neither farm nor business expenditure).

Business expenditure of Low Income Urban households averages Rs.1,483/- the low figure being attributable to the fact that many of them are wage earners with no expenditure on account of farm or livestock. In the case of the Lower Middle Income group the expenditure is a substantial amount of Rs.34,548/- on average which is mainly on account of farm and business costs. The amount would have been even higher, but for the fact that about one third of the sample comprises salaried persons. The average expenditure of the Upper Middle Income group on business etc. amounts to Rs. 45,000/- and to some extent agricultural costs of cultivation. The average is reduced because the sample includes several professionals. In regard to the High Income group, average business and farm expenditure works out to Rs. 21,900/-.

Net Income Household Expenditure and Savings etc., Rural

Low Income

Their average net income is Rs.9,093/- and their average consumer expenditure is Rs.9,170/- indicating average dissaving of Rs.77. However, their investment amounts to Rs.2,205/- which includes borrowings of Rs.1,968/- and disinvestment of Rs.111/-.

Lower Middle Income

They show overall savings of Rs.1,976/- on average, with net income Rs. 17,032/- and consumer expenditure Rs.15,056/- while their Investments amount to Rs.5,668/- on average. They have average borrowings of Rs.1,781/ - and disinvestment of Rs.763/- This still does not cover their investment which indicates that they have utilised the previous year's savings as well.

Upper Middle Income

Households have saved on average Rs.3403/- and invested nearly three times as much, *i.e.* Rs.9452/-. Their net income is Rs.29,193/- and consumer expenditure is Rs.25,190/-.

High Income

They have very high income of Rs.62,261/- on an average. They spend about half their income on consumer expenditure *i.e.* Rs.32,194/- and save on an average of Rs.30,067/-. Their investment is even higher at Rs.33,125/- since they have borrowed on average Rs.7,876/-. In fact, in several cases, they have borrowed from Co-operatives and Banks not because they need money, but for the reason the loans are available and that they could use the money for investment.

All groups have substantial investment, low income nearly 25 per cent of income, lower middle about 30 per cent of their income, upper middle a little more than 33 per cent of income and high income about 53 per cent.

For all groups, rural savings amount to 23 per cent income, while investment amounts to 39 per cent of income. Except the High Income group, the other groups save on average 9.5 per cent of their income. However, they are able to invest 31.3 per cent of their income. They are able to do so by adding, borrowing and disinvestment to savings and sometimes using the previous years savings as well.

Income, Expenditure and Saving etc., of Urban households

Low Income

Their average net income is Rs.8,211/- and expenditure is Rs. 8,205/-. The average disinvestment is Rs. 625, and savings plus disinvestment are nearly equal to the investment of Rs.875/- while they have

borrowed Rs.1,113/-. A substantial part of it will be invested or spent next year. This is in contrast to the rural low income group, many of whom spend more than their income and have a dissaving of Rs.77/-.

Lower Middle

Their average net income of Rs.18,803/- allows them spend as much as Rs. 15,744/- and save Rs.3,059/-. Their investment amounts to Rs.5,871/- and their borrowing plus disinvestment (Rs.4,550 & 456), covers a substantial part of the investment. This leaves a significant amount from saving of Rs.3,059/- to be carried over next year. This Urban group has a higher income than the lower middle income rural group, and in spite of a higher expenditure, they save more than the latter.

Upper Middle

Their net income of Rs.28,748/- and expenditure of Rs.21,114/- are both lower when compared to that of the group, while their savings of Rs.7,634 are higher than that of the latter. The investment of Rs.13,364/- is considerably higher than that of the rural group and it is practically equal to disinvestment of Rs.2,011/- plus borrowing of Rs.11,477/-. This leaves them with substantial savings for the next year.

High Income

Their average net income of Rs.47,507/- is much less than that of their rural counterparts while their expenditure of Rs.28,603/- is fairly high, and hence their savings of Rs.4,640/- amount to 1/6 of the rural high income savings. Their investment of Rs.7,237/- is much less than that of the rural households. Their borrowing, however is higher at Rs.11,887/- and it represents a substantial amount on hand.

In all, though average urban income is lower than the rural, their propensity to save is higher, especially for the middle income groups. There is a growing demand for consumer durables and the saving propensity is encouraged by the existence of a large numberr of chitfunds, finance institutions etc. Rural people except the big farmers, tend to spend a major portion of earnings. The assets, income-expenditure, savings, investment details of low income, lower middle, upper middle and high income are given in *Appendix-24.*

Financial Investment

The Financial Investment of Rural Households are, on average, higher than those of their urban counterparts. The investment amounts are often in excess of their savings and even in excess when borrowings and dis-investment amounts are added. Low income rural households invest more in chit funds than in other items, such as bank deposits or post office savings. Their average investment amounts to Rs.566/-. In the case of the Lower Middle Income group, their average investment of Rs.2,789/- is largely in

bank deposits, 42 per cent and provident fund 19 per cent. The Upper Middle Income group invest more than half their total investment of Rs.5,189/- in bank deposits, while the High Income Group also make a similar percentage of their total investment in Bank deposits. In keeping with their very high incomes and savings, they are able to invest on average Rs.13,514/- in financial terms.

In the case of Urban households, the Low Income group financial investment averages only Rs.343/- with small deposits in banks and the post office. The largest investment is in chit funds. The Lower Middle Income Group invest nearly 30 per cent of the total in bank deposits and the next largest sum in chit funds, the average being Rs.2,194/-. Upper middle income group has average financial investment of Rs.4,618/- and here again bank deposits are the main while provident fund amounts to 10 per cent and chit funds 71/2 per cent. The High Income group invest 35 per cent of their total average investment of Rs.7,814/- in bank deposits, followed by chit funds 22 per cent, and provident fund 10 per cent. The Upper Middle Urban group is the only category whose per capita investment is slightly higher than that of the rural group.

Financial Investment of Rural households and Urban households and total average and per capita Investment households are shown in *Appendices - 25, 26 and 27.*

Physical Investment

In the case of physical investment, the Rural Low Income group has made larger investment than the Urban, the average being Rs.1,648/-. Purchase of Agricultural implements accounts for over 40 per cent and purchase of livestock 36 per cent while gold accounts for over 16 per cent. The physical investment of the Lower Middle group amounts on average to Rs.2,887/- the main item being gold to the extent of 34 per cent and purchase of land and of livestock accounting for 20 per cent each. The Upper Middle group, on the other hand spends over 46 per cent of their total income on purchase of implements and nearly 30 per cent on gold, the average amounting to Rs.4,227/-. As for the High Income group, their average investment comes to Rs.20,000/- about a third of it being on account of agricultural equipment, 27 per cent for house construction and 21 per cent on gold jewellery.

Urban households, except for the Low Income group, make fairly high physical investment, as compared to their net income. For the Low Income Group, a third of their average investment of Rs.507/- is spent on home consturction, 30 per cent purchase of business equipment and 24 per cent on purchase of gold, the average amounting to Rs.507/-. The Lower Middle group invests over 40 per cent of their average of Rs.3,677/- in house construction, 25 per cent in business equipment and 11 per cent each in

gold and purchase of vehicles. As for the Upper Middle group, 50 per cent of their physical investment is on house construction, 14 per cent in gold and 13 per cent on purchase of land. Their average investment amounts to Rs.8,700/-. The High Income group are able to make a substantial investment of Rs.11,814/- on average, in spite of their moderate net income. While they invest nearly 25 per cent of gold, they are able to spread their other investments fairly equally between purchase of land, business equipment, vehicles, and house construction. While average amounts of physical investment are higher for the rural groups than the urban, in per capita terms, the two middle income urban groups have larger investments. Physical investment of rural households, urban households and total, average and per capita investment are given in *Appendices - 28,29 and 30.*

Borrowing

As regards borrowing, urban households, have on the whole, borrow more heavily than rural. Only the Rural Low Income group has borrowed more on average Rs.1,967/- as against the Urban Low Income groups amount of Rs.1,113/-. The Rural Upper Middle group has borrowed larger sums than the High Income group, the amounts being Rs.9,706/- and Rs.7,878/- respectively. Commercial banks have been the sources, to an extent ranging from 46 per cent for the Low Income group to 82 per cent for the Upper Middle group. Cooperative Bank constitute the next source, providing as much as 40 per cent to the different groups. Only the Low Income group has resource to the village money lender to the extent of 10 per cent.

The Urban group depends even more heavily on the Commercial banks, which furnish 57 to 70 per cent of the average borrowing. Co-operative banks are the next substantial creditors to the extent of about 15 to 22 per cent. The Low Incom group also has recourse to professional money lenders, to the extent of 27 per cent of the total. It may be seen therefrom that except for the Low Income group, both average borrowing and per capita borrowing are higher for the urban households.

Sources of borrowing among the rural households and Urban households and given in *Appendices - 31 and 32*[41].

State Income

The year 1970-71 in general witnessed a steady growth in all major sectors of the state economy. State income in real terms increased by 5.54 per cent in 1969-70 and by 5.62 per cent in 1970-71[42]. In absolute terms, the State Income at constant prices rose from Rs.1513.8 crore in 1969-70 to Rs. 1519.8 crore in 1970-71 and at current prices from Rs.2420.5 to Rs.2648.9 crore. State income at current prices witnessed a growth of 7.7 per cent from Rs.3805.83 crores in 1974-75 to Rs.41000.25 crore in 1975-76[43]. At current prices, State income for 1979-80 had been estimated at Rs.6275.30 crore, a growth of a 22.55 per cent increase over the previous

year's (1978-79) income of Rs.5120.41 crores[44]. At current prices, State income for 1986-87 was estimated at Rs.14,492.71 crore which had gone up by 10.39 per cent over that of 1985-86[45].

Trends in Prices

Index Numbers of Wholesale Prices

Tamil Nadu is marginally surplus in cereals, groundnut oil, sugarcane and chillies while it is deficit in regard to other essential commodities.

Towards, price level in Tamil Nadu, improved trend was noticed during 1969. This showed a reversal in the beginnig of 1971 and more or less continued till June 1971[46]. From July onwards, wholesale index prices for 1971 showed only marginal rise of 2.62 per cent compared to the level obtained 11.0 per cent in 1970 and even this rise was contributed by the general uptrend noticed since August 1971. The Year 1980 (January to December) witnessed an accentation of the uptrend in the general price level. This is largely reflective of the inflationery pulls to which the whole country was exposed during the last two years[47]. Other equally strong forces which caused the prices of essential commodities scale up this year had increased cost of cultivation and posed difficulties in movement by railways and inculcated high cost of road transport. It is significant that the uptrend in prices in 1980 was not accompanied by conditions of scarcity commodities, however, was kept up through a well managed Public Distribution System.

Cost of Living Index Numbers

The cost of living index numbers for industrial workers showed more or less a similar trend in conformity with the over all price movement of foodgrains[48]. Cost of living index in general varied between different urban centres.

Wholesale prices

The wholesale price index of Tamil Nadu (Base:1970-71=100) for all commodities had moved up from 398 in January 1987 to 432.3 in September 1987. When nine months average of the index for the year is compared with the average for the corresponding period of 1986, a 9.6 per cent increase is evident. It is slightly higher than in 1986 over the previous year (9.5 per cent) considering the nine months picture. At the all India level, the all-commodity index of whole sale prices on an average has advanced from 369.2 in 1986 to 390.6 in 1987, registering a 5.8 per cent increase which has been faster than in the corresponding period of 1986 (5.0 per cent)[49]. The comparative indices for Tamil Nadu and All India are presented in *Appendix-33*.

Rural Prices

The annual average of all commodity Consumer Price Index for rural Tamil Nadu for 1987 compared with the average of the corresponding period of 1986 has evidenced a rise in the general price level in the countryside by 8.4 per cent which compared favourably with (1) the price the pace of increase which occurred in the previous year (8.9 per cent), (ii) The rate of increase in the consumer price index for industrial workers for this year (9.4 per cent) and (iii) the rate of increase in the wholesale price index for this year (9.6 per cent). The rural consumer has thus been slightly better off during 1987[50].

The rural price index numbers for Guduvancheri for the years between 1963 and 1976 are exhibited in *Appendix-34.* The consumer price index numbers for industrial workers for Chengalpattu MGR district is given in *Appendix-35.* Annual peak marketing weighted wholesale average prices of certain commodities in the Chengalpattu MGR district is shown in *Appendix-36.* Annual average retail prices of important commodities in Chengalpattu MGR district is given in *Appendix-37.* Consumer price (composite) Index Numbers for Rural Tamil Nadu between 1980 and 1991 is tabled in *Appendix-38.*

Small Savings Scheme

The Department of Small Savings is mainly concerned with the objectives of promotion of the ideal of thrift as a way of life among the various classes of people of the state and mobilisation of household savings for national development. The endeavour of this organisation is to make savings a 'National Movement'[51]. The achievement under Small Savings Scheme (Gross and Net) in the district from 1972-73 to 1990-91 is given in *Appendix-39.*

People who come under "Working Class" are also made aware of the 'Savings Movement'. The field staff of this department approach various Institutions/Factories/Offices and State and Central Government Undertakings to mobilise more deposits towards the scheme. Small savings campaigns are also conducted by the various groups of field staff regularly and efforts are taken on total coverage of the working class under Pay Roll Savings Scheme, strengthening the agency force, Sanchayika Scheme and exploring new avenues of resources so as to mobilise more deposits towards small savings thereby making available a steady flow of revenue to the state.

Wages

Wages for employment in agriculture and various items of ancillary to agriculture

The minimum rates of wages for employment in agriculture and various items of work ancillary to agriculture were revised in 1983 Wages Act, 1948.

In 1987, a Committee was constituted for *further* revision of these rates of wages. Based on the recommendations of the Commiittee, the minimum rates of wages for employment in agriculture and various items of work ancillary to agriculture were further revised and this revision came into force from 3rd April 1989. The minimum rates of wages for employment in agriculture and various items of work ancillary to agriculture as revised in 1983 and 1989 are tabled in *Appendix-40.*

Minimum rates of wages for employment in powerloom Industry

In 1975, the Government of Tamil Nadu issued notification fixing minimum rates of wages for employment in powerloom industry for the first time[52]. The order was quashed by the Madras High Court on the ground that the composition of the Committee based on which the above notification was issued, was not in accordance with section 9 of the Minimum Wages Act, 1948. In 1980, the Government issued a preliminary notification for fixing minimum rates of wages for this employment[53]. In view of the large number of objections, the notification was, however, cancelled in 1981. Again in the same year, a committee was constituted to advise the Government in the matter of fixation of minimum rates of wages for employment in powerloom Industry[54]. Based on the recommendations of the Committee, Government fixed minimum rates of wages for employment in power loom industry and this came into force from 1 May 1983.

Minimum rates of wages for employment in Handloom Weaving Industry

The Government of Tamil Nadu fixed, initially, the minimum rates of wages for employment in Handloom Weaving Industry in 1974 and 1975[55]. Government constituted a committee in 1981 for revision of minimum rates of wages for employment in Handloom Weaving Industry. Based on the recommendations of the Committee, Government revised the minimum rates of wages and enforced it from 1 May 1983.

Minimum wages fixed by the government to workers engaged in different ocoupations from time to time between 1985 and 1990 are tabled in *Appendix-41.*

Employment and Employment Exchanges

In order to cater to the needs of all categories of job seekers, employment offices have been established in Tamil Nadu. Employment exchanges for post-graduates, engineers, doctors, and other professionals and special employment office for phycically handicapped have also been set up in the State.

Professional and Executive Employment Office, Madras

Highly qualified candidates in Professional, Scientific, Engineering, Managerial and Supervisory categories in Tamil Nadu are registered by this office for providing suitable employment opportunites for them. This office

maintains close liaison with leading employers both in public and private sector.

Special Employment Office for Physically Handicapped

A Special Employment Office is fuctioning at Chennai to provide special placement assistance to the physically handicapped such as blind, deaf and orthopaedically hadicapped. There are seven special cells for physically handicapped in the state and one such cell is located at Kancheepuram. Besides registration of physically handicapped applicants, these units identify suitable job positions for the physically handicapped by maintaining close contacts with public and private sector employers.

Industrial Training Institutes

With a view to providing special placement service to technically qualified persons like diploma holders and craftsmen trained in Industrial Training Institutes and place them in suitable jobs in public and private sectors. Separate Employment Exchanges, have been established for them at Madras, Tiruchirappalli, Madurai, Coimbatore and Vellore. Under the scheme, a sum of Rs.2,000/- or 1/4 of loan sanctioned by Nationalised banks whichever is less is also provided by the state government to such technically qualified persons with a view to promote self employment.

Employment Market Information

Employment Market Information Programme is operated under the provisions of the Compulsory Notification of Vacancies Act 1959. As per the provisions of the Act, all establishments in Public Sector and establishments employing 25 or more workers in private sector are required to notify vacancies occurring in their respective establishments to the Officer in charge of the Employment Exchange in whose Jurisdiction they are located. In addition, these establishments furnish details of the total number of employees, and number of vacancies occurred to the employment exchange. In addition, these establishments furnish details of the total number of employees, and number of vacancies occurred to the employment exchange every quarter. The information thus collected is furnished to State and Central Governments for planning purposes. An Employment Market Information Unit is also functioning in each Distict Employment Exchange. These units also collect census of the central government employees and send it to the Government of India.

Vocational Guidance and Employment Counselling

In order to motivate job-seekers to plan their career in a scientific manner, the Vocational Guidance Units attached to each employment exchange, disseminates useful information on careers and training facilities available by adopting Group Guidance, talks, Individual Information and career exhibitions. Two special vocational guidance centres for tribals have

been set up at Udhagamandalam and Sankarapuram in South Arcot district to provide vocational guidance to Scheduled Tribes jobseekers and to identify vacancies in occupations suitable for Tribes and sponsor them against such vacancies.

Employment Liaison Unit

A separate Employment Liaison unit is functioning at the Directorate of Employment and Training, Madras to provide necessary assistance to the Burma and Sri Lanka repatriates in securing suitable employment and training facilities.

Unemployment Relief Scheme

The Government of Tamil Nadu implemented a scheme known as 'Unemployment Relief Scheme' in 1980 for payment of unemployment relief to certain selected categories of job seekers remaining on the live register of employment exchange for more than five years subject to certain terms and conditions.

The following approved categories of job seekers registered with the employment exchange who have completed five years of waiting period on the live register of employment exchanges and who satisfy the conditions of the scheme are eligible for assistance under the extended scheme:

1. Graduates/Post Graduates;
2. Secondary Grade Teachers;
3. Higher Grade Teachers;
4. Physical Education Teachers (Higher/Lower Grade.);
5. Tamil/Other language Pandits;
6. Craft Instructors;
7. Diploma Holders in Engineering;
8. P.U.C./Plus Two/Under Graduates; and
9. S.S.L.C. Passed.

The above categories of applicants are eligible to receive the relief amount as mentioned below for a period of three years.

1.	Matric and S.S.L.C. Passed	Rs. 50/- p.m.
2.	P.U.C/Plus Two/Under Graduate	Rs. 75/- p.m.
3.	Graduates/Post Graduates	Rs. 100/-p.m.

Identification, sanction and disbursement of unemployment relief amount to the beneficiaries in the above categories are attended to by the officers incharge of employment exchanges of the districts.

Unemployment Relief Scheme to the blind

Applications from blind who have acquired SSLC or equivalent qualification or those who are in possession of a trade certificate from Industrial Training Institute are also covered under this scheme with effect

from 1 October 1981 and a sum of Rs.50/- is given to such categories as relief. In 1988, the Unemployment Relief Scheme has also been extended to cover 'Below Matric' (non-Matric) applicants and the relief amount has since been revised. From 1st May 1992, relief is sanctioned to them at the following rates:

1.	Matric and below Matric	:	Rs.150/- pm.
2.	PUC/Plus Two/Under Graduates	:	Rs.200/ pm.
3.	Graduates/Post Graduates	:	Rs.250/ pm.

The Unemployment Relief Scheme has been extended to SSLC and PUC passed job seekers (Blind) registered with the employment exchanges and waiting for more than one year on the Live Register with effect from 15th September 1984. Unemployment Relief at the above rates is paid to such eligible beneficiaries for five years at quarterly intervals by the employment exchanges[56].

Activities in the District

There are two District Employment Offices in this district, one at Kancheepuram and the other at Thiruvallur. The District Employment Office, Thiruvallur is a composite office formed by merging the two sub-employment offices at Ambattur and Thiruvallur and it is functioning from 4 August 1986. The District Employment Office at Kancheepuram was functioning in Madras and subsequently shifted to Kancheepuram on 13 October 1982. A comparative picture of unemployed persons as per the Live Register and placement from 1967 to 1989 are given in *Appendix-42.*

Working Force

Economic growth and living standards are closely associated with the number of individuals engaged in economically productive activity, in addition to the availability of natural resources. 'Workers' as we know are the real producers of goods and services and their ratio in the population is, there fore, an important index. Based on the activity of every individual, the population is classified in the census as main workers, marginal workers and non-workers. Roughly, two out of every five individuals in Tamil Nadu are workers. Economically, active population are more among the males than among females. A large majority of the main workers are engaged in agricultural activities either as cultivators or as agricultural labourers.

As per 1961 census, there were 9,53,175 workers. Among them, 60.45 per cent were cultivators and agricultural labourers, 18.92 per cent were engaged in mining, quarrying, household industry, manufacture and construction, 3.89 per cent of the workers were engaged in trade and commerce, 1.80 per cent in transport and communications and 14.94 per cent in other services. Out of the total number of cultivators, 3.71 per cent were in urban. Out of the total workers, 83.36 per cent were in rural areas and only 16.64 per cent in urban areas[57].

The total workers as per 1971 Census were 9,80,441 which showed only a marginal increase of 2.86 per cent over the 1961 Census figures. Out of the total workers, the percentage of cultivators, agricultural labourers, and their allies constituted 60.01. About 91.88 per cent of the workers engaged in agricultural and allied operations were in rural areas. Workers engaged in mining and quarrying, household industry, manufacture and consturuction formed 18.52: trade and commerce 6.59 per cent, transport, storage and communication 4.21 per cent while workers engaged in other service were 10.68 per cent. Out of the total workers, 69.82 were in rural parts and the remaining were in urban parts.

Classification of workers in the district as per Census 1991 is shown in *Appendix-43.*

The total workers as per 1981 Census were 12,76,787 and the rate of increase in the total workers as per 1981 Census over the previous decade was 30.22 per cent. Out of the total workders, cultivators and agricultural labourers formed 55.21 per cent and the agricultural population in rural areas formed 92.20 per cent. The percentage of workers engaged in household industry, manufacture, processing, servicing and repairs formed 5.36 per cent. The percentage of 'other workers' constituted 39.43. Out of the total wokers, 69.82 per cent were in rural and 30.18 per cent in urban areas. The distribution of workers in the district as per 1981 Census is given in *Appendix-44.*

As per 1981 Census, Chengalpattu MGR district accounted for 6.7 per cent of the total main workers of the state as compared to the state percentage of 39.30[58]. The percentage of workers to total population was only 35.30. The percentage of male workers to male population was 53.10 and the state percentage was 55.85. In the case of women workers, the percentage participation was 16.69 in the district.

Employment in Different Occupations

Out of 2,36,999 persons (as on 30 September 1989), employment of fresh workers in different occupations formed a major share of 193,837 persons representing 81.79 per cent. Next followed the persons numbering 18,612 worked in production and related items of work which constituted 7.80 per cent. Employees in clerical and allied items of work (6282) and unskilled workers such as dhobies, barbers, sweepers, etc. (6084) formed 2.65 per cent and 2.57 per cent respectively. The percentage of skilled workers (numbering 5619) to the total workers was 2.38 per cent. Employees such as office assistants and record clerks, numbering 457 formed only 0.20 per cent. The contribution of sales workers (640) to the total workers was only 0.30 per cent[59]. Employment position in different occupation (as on 30th September 1989) is shown in *Appendix-46.*

Employment in Agriculture and Allied Sectors

Employment in agriculture and allied sectors during 1970 was 591 which increased to 751 in 1976 showing an increase of 160 in a period of six years. The year 1977 witnessed a marginal decrease in employment over the previous year. In 1981, the total employment in agriculture and allied sectors was 1085 showing an increase of 334 in a span of five years. In 1986, the persons employed in the sector touched a new high i.e. 1267[60]. Employment position in Agriculture and allied sectors between 1970 and 1986 is tabled in *Appendix - 48.*

Employment in the State and Central Government Offices

State Government Offices

The district surrounds Madras, a metropolitan, on three sides and many central and state government Offices, business enterprises, commercial establishments are located in the peripheral of the Madras City as well as taluk and district headquarters. Hence, persons employed in the state and central government offices are remarkably high.

The total number of persons employed in the state government offices in 1967 was 16,924 and this figure increased to 22,630 in 1977 and to 38,167 in 1987. In the year 1988, there was a spurt in the employment position in the district and about 53,771 persons had been under state government employment[61].

Central Government Offices

In 1967, there were 19,601 persons working in the central government departments. The years 1968, 1969 showed a decline in number of persons employed. From 1970 to 1972 there was an upward trend and again there was a slight downward movement, *i.e.* from 18,120 to 17,880 in employment position in 1973, 1974 and 1975. During 1979, the total number of persons under employment in the central government departments increased to 22,211. Between 1980 and 1987[62], there was a slight upward and downward trend in employment position but there was no remarkable improvemnt. During 1988, the number of persons under employment had risen to 25,604 which showed an increase of 3,328 over the previous year.

Number of persons under employment in the state and central government departments between 1967 and 1988 is tabled in *Appendix-47.*

Employment in Public Sector Undertakings

In 1967, there were 6,993 persons working in the public sector undertakings and the number increased to 10,546 in 1971,14,148 in 1975 and 23,637 in 1980. Between 1985 and 1988, there was a steady upward trend in employment position revealing the figures at 25,629, 26,074,31,847

and 33,255 in 1985,1986,1987 and 1988 respectively[63]. Persons under employment in public sector undertaking is shown in *Appendix-47*.

Employment of Women in the Organised Sector

There were 6,557 women working in the organised sector in 1967. In 1977, the number of women workers nearly doubled within a decade which stood at 13,156. From 1983 onwards, there was an increasing trend in the employment of women and the figures stood at 23,813, 27,260 and 34,823 in 1986, 1986 and 1988 respectively[64]. The employment of women in the organised sector is shown in *Appendix-47*.

Employment in Industries and Other Sectors

Industries and other sectors include mining and quarrying, manufacturing, electricity and water, construction wholesale, retail trade and restaurents and hotels, transport, storage and communications, financing, insurance real estate and business services and community social and personal services.

Manufacturing industry tops the list in providing employment opportunities followed by financing, insurance, real estate and business services. Sectors engaged in transport, storage, commuications, electricity and constructions also provide employment to some extent. It is noteworthy that persons rendering community, social and personal services are on the high side since 1976.

Employment position in Industries and other sectors for the period from 1970 to 1989 is given in *Appendix-48* [65].

Developmental and Poverty Alleviation Programmes

Since independence, our development thrust had been two pronged, one, through general economic development and the other by direct attack on the two sources of poverty and unemployment. Several programmes have been implemented and new schemes launched to provide employment opportunities and to uplift the weaker sections. Details of the programmes are briefed below:

Community Development Programme

The Community Development Programme was launched in 1952[66]. The programme aimed to uplift the under privileged section of the rural community and to generate in them a spirit of self-reliance and a desire for further improvement. People's participation formed and integral part of the Community Development Programme. The Community Development Programme underwent a change with the introduction of the Tamil Nadu Panchayats Act 1958. The Community Development Programme aimed at improving villages through agriculture, animal husbandry and irrigation, roads and communication, health, education and housing.

National Extension Service (NES)

The National Extension Service Scheme was implemented in 1952. The scheme aimed to provide scientific and technical assistance to the villages. Panchayat Raj was established in 1959 for the overall development of villages.

Rural Industries Project

The project was launched in 1962 with a view to provide a package of inputs to the rural artisans. It covered an area ranging from three to five blocks.

Small Farmers Development Agency (SFDA)

Small Farmers Development Agency was set up in the state in 1970-71 to improve the economic condition of small and marginal farmers. The agency was however, established in Chengalpattu MGR District in the year 1975. This was later converted as District Rural Development Agency in the year 1987.

District Rural Development Agency

The District Rural Development Agency, Chengalpattu MGR District at Kancheepuram is implementing different programmes for the benefits of weaker sections, namely families below the poverty line with special emphasis on SC/ST, small and marginal farmers agricultural labourers and rural artisans. The programmes that are implemented are (i) Integrated Rural Development Programme, (ii) National Rural Employment Programme, (iii) Rural Landless Employment Guarantee Programme, (iv) Jawahar Velai Vaippu Thittam, (v) Massive Agricultural Assistants Programme for Small and Marginal Farmers, (vi) Social Forestry Programme and (vii) Bio-Gas Programme. and (viii) National Programme on Improved Chulahs.

The achievement under these programmes are flashed herenuder.

Integrated Rural Development Programme

Integrated Rural Development Programme is inplemented in all the blocks of the state. Under this programme, credit linked subsidy is provided to the identified families below the poverty line, in particular, poorest of the poor families to enable them to have their own employment and to cross the poverty line. Subsidy component is shared both by the Centre and State on 50:50 basis. The loan portion is met from the Institutional Finance.

In accordance with the guidelines issued by the Government of India, Credit-linked subsidy was provided to the identified old beneficiaries of the VI plan period of the years 1982-83 to 1984-85 who had not crossed the poverty line for various reasons so as to enable them to cross the poverty line by supplementary dose of assistance[67]. In addition, new beneficiaries were identified and rendered assistance. A maximum subsidy of Rs.3000/- was allowed to the beneficiaries. This programme is implemented

in all the 27 Blocks of the district from 2 October 1980 after the merger of the Small Farmers Development Agency and the Integrated Rural Development Programme in the year 1980.

The programme aims to achieve the selected objectives by providing income generating assets including working capital, wherever necessary to the target group families through a package of assistance including subsidy and institutional credit.

The out of line for indentification of families below poverty line is fixed as Rs.4800/- per year. But initially, the families with an annual income of Rs.3,500/- below are identified and assisted and after exhausting all such families in the village, families with an annual income of above Rs.3500/- and below Rs.4800/- are selected and provided with assistance. The identification of beneficiaries below poverty line is made through field surveys conducted by the Rural Welfare Officers in the Block Development Offices. The selection of families for assistance is made by the Task Grama Sabha (Assembly of villages) Force Committee constituted for this purpose[68].

The families consist of SC/ST, small and marginal farmers, agricultural labourers and rural artisans. Among the selected families, minimum of 50 per cent constituted SC/ST families and women 331/3 per cent till 1989-90. In the year 1990-91, this was increased to 40 per cent physically handicapped constitutes three per cent of the total numbers.

The quantum of assistance to these selected families in terms of money value is as under:-

1. SC/ST families-Subsidy alone subject to a maximum of Rs.3000/- or 1/3 rd of the unit cost during the year 1989-90. SC/ST families subsidy alone subject to a maximum Rs.5,000/- or 50 per cent of the unit cost during the year 1990-91. Physically Handicapped beneficiaries are eligible for subsidy of 50 per cent of unit cost subject to a maximum of Rs.5000/-.
2. Small Farmers-Subsidy alone subject to a maximum of Rs.3,000/- or 1/4th of the unit cost.
3. All other categories-subsidy alone subject to a maximum of Rs.3000/- or 1/3rd of the unit cost.

The assistance is provided on major sectors namely, agriculture, animal husbandry, fisheries, sericulture and I.S.B., I.S.B. implied Industry, service and business. The quantum of subsidy and loan is decided in respect of each beneficiary on the basis of Unit cost fixed by the NABARD depending upon the trade.

During the year 1990-91, this programme has been extended to the Town Panchayats also. The implementation of this programme is based on the Annual Action plan and the Credit plan prepared at bloc Level and consolidated at district level.

Income generating assets are created with the assistance of bank loan coupled with Government subsidy. The banker makes direct payment to the seller normally. But in Chithamur, Sriperumbudur, Pallipet and Sholavaram blocks the system of cash payment to the beneficiary is adopted for creating assets of this choice.

Achievements

Sl.no.	*Year*	*No. of beneficiaries.*
1	*2*	*3*
1.	1989-90	13,762
2.	1990-91	11,572
3.	1991-92	10,773

Training of Rural Youth for Self Employment (TRYSEM)

TRYSEM was a subcomponent of Integrated Rural Development Programme. The objective of this scheme is to provide technical skill to rural youths from families below poverty line to enable them to take up self-employment in the broad fields of agricultural and allied activities; industries, service and business activities. The target group comprises rural youth between the age group of 18-35 from families below poverty line. The full cost of the training was not from the allocation made for the Integrated Rural Development Programme. During 1991-1992, TRYSEM Scheme has been delinked from IRDP. Scheduled Caste and Scheduled Tribe trainees constitute 50 per cent while women trainees account for 40 per cent.

The poorest of the poor amongst the rural youths are identified by the block and approved by the Panchayat Union Council and final selection is made by the Task Force Committee. This procedure was followed up to 1989-90. The procedure for the selection of trainees has been revised during the year 1990-91 according to which, the selection of trainees is made by the District Level Committee constituted under the Chairmanship of the District Collector.

The trainees are selected based on their traditional skill and on aptitude, with a view to provide them with self - employment or wage employment on completion of training. The training is imparted for a period ranging from 45 days to one year. The full cost of the training is met from the allocation made for the Integrated Rural Development Programme. Each trainee is paid a stipend ranging from Rs.150/ to Rs.350/- depending upon the place where he undertakes training. Each trainee is provided with toolkit worth Rs.600/- during the course of the training to enable him to pursue self - employment.

Achievements made in the district under this scheme from 1980-81 to 1991-92 are given below:[69]

Year	No.of youth trade	Total expenditure incurred (Rs.in lakh)
1980-81	1055	4.29
1981-82	4280	28.30
1982-83	2087	19.60
1983-84	3838	40.30
1984-85	1469	24.62
1985-86	977	19.54
1986-87	945	17.78
1987-88	961	19.40
1988-89	975	28.91
1989-90	1009	26.88
1990-91	975	NA.
1991-92	1060	NA.

National Rural Employment Programme (NREP)

The National Rural Employment Programme was originally conceived as food for work programme, prior to 1980 for providing employment to the rural unemployed and under-employed. This was converted into National Rural Employment Programme in 1982. The objectives of this programme were generation of additional employment, creation of productive community assets, and improvement of overall quality of life in rural areas. This programme envisaged construction of group houses, school buildings, panchayat office building, community centres, Jeevandhara wells, and roads. Provision had also been made for construction of drinking water wells deepening of ponds and Ooranies. Other important works were taken up by the panchayats under due financial provision. This programme has subsequently been merged with Jawahar Velai Vaippu Thittam (JVVT) during the year 1989-90.

Achievements in the district under N.R.E.P. between 1980-81 and 1988-89 are furnished below:

Year	*No. of works completed*	*Mandays generated* (Lakhs Mandays)	*Expenditure incurred* (Rs. in lakhs)
1980-81	3415	12.35	113.46
1981-82	3204	20.63	142.80
1982-83	4104	16.50	224.51
1983-84	2650	26.48	10.75
1984-85	1815	25.90	317.32
1985-86	1228	22.23	248.19
1986-87	3357	26.01	479.58
1987-88	2348	23.39	467.80
1988-89	5831	40.26	776.08

Rural Landless Employment Guarantee Programme (RLEGP)

The Rural Landless Employment Guarantee Programme was launched in the year 1985. This was a centrally sponsored programme with 100 per cent grant from Government of India. The principle objectives of this programme were long term employment opportunities more to the landless agricultural labourers to help for the stabilization of the market wage rate to the level of statutory minimum wage rate. The basic objective was to provide employment opportunities to them for a period of 100 days in a year, in order to create productive and durable assets in the rural areas and to improve the overall standard of the life of the people in rural areas. The schemes implemented under the programme were group houses for the families of SC/STs, rural saniary latrines, surface irriganion works, link roads, percolation ponds and Jeevan dhara.

This programme envisaged the participation of other departments also such as Highways and Rural Works Public Works Department, Agricultural Engineering, etc. and funds had also been placed at their disposal for undertaking specific works under the programme.

The achievements in the district under the scheme from 1984-85 to 1988-89 is tabled below[70]:

Year	*No.of works completed*	*Man days generated* (Lakh man days)	*Expenditure incurred* (Rs. in lakh)
1984-85	1235	21.70	319.56
1985-86	940	20.91	332.11
1986-87	3363	25.96	449.55
1987-88	1457	21.44	398.95
1988-89	5340	24.84	475.71

This Programme was also merged with Jawahar Velai Vaippu Thittam (JVVT) in the year 1989-90.

Jawahar Velai Vaippu Thittam (JVVT)

The National Rural Employment Programme and the Rural Landless Employment Guarantee Programme implemented till 1988-89 were merged and a new programme known as Jawahar Rozgar Yojana (Jawahar Velai Vaippu Thittam) is being implemented with effect from 1 April 1989 all over the country[71]. The expenditure incurred under this programme is being shared by the Centre and the State on 80:20 basis.

Generation of additional gainful employment for the unemployed and underemployed, both men and women, in rural areas is the primary objective of this programme. The secondary objective of this programme is creation of productive country assets for direct and continuing benefits to the poverty group and for strengthening rural economic and social infrastructure and achieving a rapid growth of rural economy and steady rise in the income level of the rural poor and improvement in the overall standard of life in the rural areas.

People below the poverty line are the target group. Preference is given to SC/STs for employment. Thirty per cent of the employment opportunities under the programme is reserved for women. The central assistance is allocated to the states on the basis of incidence of rural poverty alone. From state to district, the allocation of funds is made on the basis of index of backwardness. Of the total allocation of funds received by District Rural Development Agencies, six per cent is earmarked for *Indira Awass Yojana* (construction of group houses for SC/ST). The remaining is distributed among the pachayats to the extent of at least 80 per cent of the basis of population of the panchayats. The remaining 20 per cent is the District Rural Development Agencies share for inter Block/ village works. The rate of daily wage per head (man or woman) paid in cash and kind in the year 1989-90 is given below:

Up to	*9 July 1989*	*From 10 July 1989 to 31 March 1990*		*From I April 1990 onwards*
1. Cash	Rs. 6.90	i) Cash	Rs.11.70	15.00
2. Rice (kind) kg.	Rs. 2.20	ii) Rice 1/2 kg. (kind)	Rs. 3.30	-
3. Wheat (kind) 1/2 Kg.	Rs. 0.90	iii) Wheat	..	-
Total	Rs. 10.00	Total	Rs. 15.00	15.00

Out of the share of grants received by the Panchayats and District Rural Development agencies, the expenditure on the following items are in the first charge.

1. Administrative expenditure up to five per cent and 2. Expenditure on maintenance up to 10 per cent

Balance of resources under the programme is utilised for different sectoral works as indicated below[72]:

i)	Economically productive works	-	35 per cent
ii)	Social Forestry works	-	25 per cent
iii)	Individual beneficiaries scheme for SC/STs including Million Wells Scheme	-	15 per cent
iv)	Other works including roads and buildings.	-	25 per cent

Sl.no.	*Year*	*Total Employment generated* (Million mandays)	*Expenditure* (Rs. in crore.)
1.	1989-90	91.09	201.63
2.	1990-91	75.52	196.57
3.	1991-92	83.17	211.28

Wages under the Jawahar Rozgar Yojana (JRY) or Jawahar Velai Vaippu Thittam

Of all the items of expenditure incurred by the village panchayat in a particular year, at least 60 per cent is spent on the wages of the unskilled labourers. The wages under the scheme, are paid as prescribed under the Minimum Wages Act for a particular category of employment. It is paid partly in cash and partly in kind, *viz.*, foodgrains. The rate of distribution of food grain (rice & wheat) is 1.5 kg. per manday. The rate for foodgrains distributed to the labourers under the JRY and the value thereof is as under[73].

Sl.no.	*Foodgrains*	*Rate of foodgrains per kg.*	*Value of 1.5 kg. of foodgrains.*
1	*2*	*3*	*4*
		Rs. p	
1.	Wheat	2.09	3.20*
2.	Rice (Common)	2.19	3.30*
3.	Rice (fine)	2.79	4.20*
4.	Rice (Superfine)	3.00	4.50*

(* rounded figures)

Earmarking of Funds at District Rural Development Agency Level

Of the total allocation of District Rural Development Agency, six per cent is earmarked for the construction of group houses and five per cent is allocated for administrative expenditure. The remaining fund is distributed among the village panchayats to the extent of 80 per cent on the basis of population of each panchayat.

The following sectoral works are taken up by the village panchayats by utilising the funds placed at their disposals:

a)	Economically productive assets	-	35 per cent
b)	Social Forestry works	-	25 per cent
c)	Individual beneficiaries Scheme for SC/ST including Million Wells Scheme (Jeevandhara).	-	15 per cent
d)	Other works including roads and buildings.	-	25 per cent

Government of India permit the panchayats for deviating the percentage earmarked for each sector with the exception of Individual Beneficiaries Scheme which is made mandatory. The panchayats are allowed to take up any work on the need and requirement of panchayats.

Under economically productive assets, the following works are taken up by the panchayats:

a) Roads and buildings; b) Desilting of ponds and Ooranies; c) Improvement of minor irrigation tanks; d) Desilting of supply channels; and e) Other economically productive assets.

The individual community works that are taken up by the panchayats for taking up works exhaustively benifiting members of SC/STs are :

1. Construction of group houses for individual families of sc/sts with the development of infrastructural facilities. 2. Development of land allotted to them. 3. Social Forestry Works such as raising of fuel wood and fodder plantations on lands owned by individual sc/st families. 4. Minor Irrigation

wells and group wells to cover sc/st holdings. 5. Drinking water wells for sc and st families. 6. Construction of link roads from sc/st colonies to the main road as well as pavement of streets. 7. Sanitation works in the sc/st colonies including construction of sanitary latrines. The programme is implemented on the basis of the Annual Action Plan prepared at the district level received from the Block Development Officers.

The procedure followed hitherto for the distribution of foodgrains under the NREP and RLEGP has been followed under Jawahar Velai Vaippu Thittam (JVVT) also in the years 1989-90 and 1990-91.

Achievements of the district under JVVT in the years 1989-90 and 1990-91 are given below:

	1989-90	*1990-91*
No.of works completed	10828	7682
Expenditure incurred:	Rs.1886.508 lakhs	1718.3001 lakhs
Mandays generated:	92.208 lakh mandays	70.0691 lakh mandays

Massive Agricultural Assistance Programme for Small and Marginal Farmers

The Massive Programme to assist small and marginal farmers for increasing agricultural production was launched during the end of August 1983. This ongoing programme is centrally sponsored with funds shared equally by Government of India and State Government. This programme is implemented through the Panchayat Union Commissioners at block level.

Indira Awaas Yojana (IAY)

Objective and Target Group

The target group for houses under Indira Awaas Yojana is the SC/STs and freed bonded labourers below the poverty line. The objective of the Indira Awaas Yojana is to provide houses to the member of the target group free of cost. The permissible expenditure under the programme for each house is as under:

i)	Construction of house	Rs. 8000
ii)	Construction of sanitary latrine and smokeless chullah	Rs. 1400
iii)	Cost of providing infrastructures and common facilities	Rs. 3300

In hilly areas, the cost of construction could be up to Rs.9800/- instead of Rs.8000/-. Houses are as far as possible built in clusters on micro-habitat approach so that common facilities can be provided for the clusters. The plinth area of the houses under the Yojana is 17-20 sq.mt. The design is

specific to the area, keeping in view the climatic conditions and the design of the houses prevalent with such improvements as may be acceptable to the beneficiaries. The houses have kitchen, smokeless chullahs, and the sanitary latrine unit.

Million Wells Scheme (MWS)

The Million Wells Scheme was launched with the objective of providing open irrigation wells free-of cost to the poor, small and marginal farmers belonging to SCs/STs and freed bonded labourers, from the year 1988-89 and the scheme is continued from out of the resources earmarked for MWS. The objective of the scheme is to create employment in the first instance; and to construct open irrigation wells free-of-cost for the target group as the secondary objective. The Million Well's Scheme Fund, being employment funds is used for open wells only provided they are of cost-effective mode.[74] If open wells are not feasible due to geological factors, the earmarked funds under the Million Wells' Scheme are utilised for other schemes of minor irrigation, like irrigation tanks, water harvesting structures and for the development of lands including ceiling-surplus lands allotted to the target group.

Social Forestry

Social forestry works are taken up under the JRY which have potential of giving benefits to the rural community, particularly to the rural poor. Social forestry includes soil and water conservation measures taken to ensure the survival of plants. Social forestry works under JRY are taken up on government and community lands and on roadsides, canal embarkments and the sides of the railway lines[75]. Such works are undertaken on degraded forest lands, provided the suitable community lands are not available and the village community has an access to the usufructs of plantation.

Social Forestry Programme

Social Forestry scheme is a sub-component of erstwhile National Rural Employment Programme and Rural Landless Employment Guarantee Programme and the present Jawahar Velai Vaippu Thittam. This includes soil and water conservation measures taken to ensure the survival of plants. Nearly one-fourth of the 20 per cent allocation made for JVVT is utilised for the Social Forestry Scheme since no separate allocation is made for Social Forestry. The Social Forestry Scheme is implemented through the Block Development Officers with the assistance of the Extension Officers (S.F). The Panchayat President is looking after this scheme in co-ordination with the Extension Officer (SF) at Panchayat level.

The objective of this programme is (i) to take up tree planting in poromboke lands such as tank beds, road avenues, both sides of the railway lines canal embankments etc. to fulfil the requirements of fuel wood, small

timber, fruit bearing trees, fodder etc. with the active participation of the rural women in village panchayats. Such works are undertaken on degraded forest lands, provided the suitable community lands are not available and the village community has an access to the usefulness of plantation; (ii) to provide employment opportunities to weaker sections and landless in poor rural parts and (iii) to improve ecology and environment.

The species for raising block plantation are selected according to the type of soil, distribution of rainfall etc.

Achievements of the district under Social Forestry Scheme between 1980-81 to 1991-92 are tabled below:

Year	*Area covered in* (Hectares)	*Expenditure incurred* (Rs. in lakh)
1980-81	120	11.10
1981-82	130	14.80
1982-83	189	23.62
1983-84	248	20.88
1984-85	439	34.41
1985-86	1409	102.34
1986-87	4452	136.69
1987-88	1359	126.06
1988-89	2002	147.15
1989-90	1698	84.75
1990-91	714	53.15
1991-92	713	53.37

Massive Programme of Assistance to Small and Marginal Farmers for increasing Agricultural Production :

Massive Programme of assistance to small and marginal farmers for increasing agricultural production was first implemented in Tamil Nadu in the year 1983-84 in all the blocks. The Scheme aims at assisting small and marginal farmers to get improved seeds to afford them, providing minor irrigation facilities and to improve their agricultural land. In the year 1989-90 the financial assistance given to the farmers as subsidy is Rs.5 lakh per block. The outlay of the scheme is shared between Government of India and State Government equally.

This programme consists of the following components:

i) Minor Irrigation

ii) Land Development

iii) Distribution of minikits of seeds of pulses and course grains

Minor irrigation includes activities like digging wells, deepening of existing wells, provision of pumpsets, diesel engines and pipelines etc., for irrigation purposes.

Land Development comprises activities such as improving the alkaline lands, contour bunding, bench terracing, tractor ploughing, construction of check dams to control soil erosion, applying silt to compensate the loss of fertility of top soil due to continued cultivation of land etc.

The first two programmes are implemented by the Rural Development Department through the DRDA, and Agricultural Engineering, while the other component is implemented by the departments of agriculture, oilseeds and horticulture.

The main target groups under this programme are small farmers and marginal farmers, preferably SC/STs. The small farmers and marginal farmers selected for assistance are approved by the Panchayat Union Council and the respective Task Force Committees. The small and marginal farmers who are rendered necessary financial assistance as per the unit cost fixed by NABARD for each activity. The small farmers are provided with a subsidy of 25 per cent of the unit cost while the marginal farmers are granted 331/3 per cent of the unit cost.

Physical target as such has not been fixed by government under this programme. Only financial provision is made for the implementation of this programme.

The achievements of the district made under this programme between 1983-84 and 1989-90 are tabled below :

Year	*No. of small and marginal farmers aided.*	*Area covered* (In hectares.)	*Expenditure incurred* (Rs. in lakh)
1	*2*	*3*	*4*
1983-84	2438	163	45.29
1984-85	3652	4324	90.81
1985-86	3468	1120	61.02
1986-87	2907	1945	32.09
1987-88	4057	2843	102.60
1988-89	947	704	34.35
1989-90	981	1381	38.35

National Project on Bio-gas Development

The National Project on Bio-gas development is a Central Sector Scheme being implemented in all the districts of Tamil Nadu with full assistance from Government of India[76]. The object of the programme is to conserve and maximise use of waste materials as fertilisers and generate energy through bio-gas system. The role of bio-gas as a major source of renewable energy has been acknowledged and included in the Twenty Point Programme. A training course to masons in the construction and maintenance of bio-gas plants is also conducted, besides one day users training course.

The scheme is being implemented by Rural Development Department from 1981-82 onwards[77]. The bio-gas programme has been taken up for implementation in the distriict by the District Rural Development Agency from the year 1989-90. Prior to this, the scheme was implemented by the Collector of the Chengalpattu-MGR district. During the year 1989-90, 718 bio-gas plants were installed as against the target of 700[78]. This programme continues to be implemented during the year 1990-91 by DRDA.

National Programme on improved Chulahs

National Programme on Improved Chulahs launched in December 1983, by the DNRS, is a unique programme for women. The main objectives of the programme are, (i) to conserve and optimise the use of fuel woods; (ii) to help in preventing deforestation; (iii) to generate employment opportunities in rural areas by engaging the self employed workers for installation of chulahs, repairs and maintenance; (iv) to reduce drudgery of women and their health hazards by eliminating some from the kitchen. From December 1983 to March 1992, about 67671 chulahs were installed in Chengalpattu-MGR district[79].

Tamil Nadu Adi-Dravidar Housing Development Corporation (TAHDCO)

One of the basic requirements of human beings is shelter. In countries like India where the population growth is high, accommodation is a serious problem. The population growth causes demand for housing and other infrastructure facilities. Finding adequate resources for construction of houses is beyond the reach of most of the people especially the weaker sections without the assistance of some institutional finance. Housing co-operatives play the role of one such agency and assist ordinary people with limited resources to construct their own houses[80].

The TAHDCO, a quasi-government organisation has been set up to implement development programmes for uplifting the Adi-Dravidars and tribals from the poverty line. It is implementing the schemes from 1982-83 onwards. Some schemes are implemented through Cooperative Department, Tamil Nadu Khadi and Village Industries Board and Employment and Training. Since funds are provided by TAHDCO to these Departments for

implementation, the District Development Officer attached to the TAHDCO inspects the programmes periodically and thus streamlines its implementation.

The department has allocated Rs.13.13 lakh as subsidy for implementation of the programme in all the 27 blocks of the district in 1990-91[81].

Activities of TAHDCO in the district

The TAHDCO has implemented various schemes in the district for the upliftment of the Adi-Dravidars. The following are the important schemes implemented through TAHDCO.

Important schemes implemented through TAHDCO are :

1. Housing Scheme (State Plan); 2. Petty Trade Loan Scheme (State Plan); 3. Cluster Development Programme; 4. Urban Training Programme; 5. Margin Money Scheme; 6. Urban Self Employment Programme; and 7. Other Special component plan schemes under Special Central Assistance.

The achievement in the district in regard to construction of houses to the target group from 1982-83 to 1986-87 are tabled below[82]:

Year in which houses sanctioned. 1.	*No. of houses sanctioned and constructed.* 2.	*Amount spent (Rs.)* 3.
1982-83	776	46,35,000
1984-85	65	3,72,000
1986-87	45	2,70,000
1986-87 (Tribal Housing)	20	1,20,000
	Total	53,97,000

Cluster Development Programme

In the year 1982-83, Minjur Block in Chengalpattu MGR district was selected to implement Cluster Development Programme under Special Component Plan. The programme for integrated development of a cluster of 10 Adi-Dravidar villages with the hamlets in Minjur Block for the Economic upliftment of 1007 Adi-Dravidar families was taken up at an out lay of Rs.54.83 lakhs.

Acharapakkam block was selected during the year 1984-85 for implementing the Cluster Development Programme. A cluster of 24 villages in Acharapakkam block was selected to benefit 1720 families who were below poverty line. The schemes taken up and implemented and the expenditure incurred thereon are tabled in *Appendix-49*.

Petty Trade Loan Scheme

Under Petty Trade Loan Scheme, loans are sanctioned to Adi-Dravidar beneficiaries in the villages with 25 per cent subsidy from TAHDCO. The scheme is implemented from 1984-85 onwards. The details of loan sanctioned and subsidy released from TAHDCO from 1984-85 to 1986-87 are tabled below yearwise.

Sl. no.	*Year*	*Physical Target for the year* (No. of beneficiaries)	*Financial Target for the year* (Rs. in lakh)	*Number benefited*	*Amount of subsidy sanctioned.* (Rs. in lakh)
1.	*2.*	*3.*	*4.*	*5.*	*6.*
1.	1984-85	70	0.70	96	0.70
2.	1985-86	70	0.70	79	0.70
3.	1986-87	45	0.45	70	0.68

Urban Self Employment Programme

Under the Urban Self Employment Programme, loans are sanctioned to poor Adi-Dravidars living in Municipal areas to start their own business with 50 per cent subsidy by TAHDCO. Loans sanctioned and subsidy released by TAHDCO from 1984-85 to 1986-87 are tabled below:

Sl. no.	*Year*	*Physical Target (No. of beneficiaries)*	*Financial Target Rs. in lakhs*	*Number benefited*	*Amount of subsidy released* (Rs. in lakh)
1.	2.	3.	4.	5.	6.
1.	1984-85	200	4.40	300	4.40
2.	1985-86	200	4.40	207	4.40
3.	1986-87	220	11.10	460	11.10

Urban Training Programme

The government have also accorded sanction for Training Programme for Adi-Dravidars on Trysem Pattern with financial assistance by way of subsidy from Special Central Assistance to Special Component Plan for S.Cs. during the years 1983-84 to 1985-86. The number of beneficiaries benifited and subsidy released are tabled below:

Sl.no.	Name of the Trade	No.of benefi-ciaries	Name of the Industry (Institute where training imparted)	Amount of subsidy
1.	2.	3.	4.	5.
		1983-84		Rs.
1.	Tractor Mechanic	20	ITI. Chengalpatu	24,000/-
2.	Automobile	20	-do-	24,000/-
3.	Leather works	20	-do-	24,000/-
4.	Rewinding of Electrical motors	10	ITI. Ambattur.	12,000/-
5.	Simple wiring repairing of Electrical motors	20	-do-	24,000/-
	Total	90		1,08,000/-
		1984-85		
1.	Tractor Mechanic	20	Chengleput Dist. Co-op. Agro Service Ltd. Kancheepuram	24,000/-
2.	-do-	20	ITI. Chengalputtu	24,000/-
3.	Rewinding of Electrical motors.	15	ITI. Ambattur	18,000/-
4.	Simple wiring & Repairing	15	ITI. Ambattur	18,000/-
5.	Pedal Loom Weaving	20	Kancheepuram Weaving Trg. Centre.	24,000/-
Total		90		1,08,000/-
		1985-86		
1.	Mechanic Refrigeration & Air Conditioning	15	ITI. Guindy	...
2.	Simple Electric wiring & Repair of Electric Appliances	15	ITI. Ambattur	18,000/-
3.	Rewinding of Electric motors	15	ITI. Ambattur	18,000/-

4. Tractor Driving and mechanic	15	ITI. Chengalpattu	18,000/-
5. Pedal loom weaving	15	Kumaran Pedal loom Centre, Kancheepuram	18,000/-
6. Pedal loom weaving	15	-do-	18,000/-
Total	90		90,000/-

Margin Money Scheme

Under the Margin Money Scheme, 25 per cent of the loan amount sanctioned to Adi-Dravidars under various schemes is released to the Banks concerned by TAHDCO as margin money. The margin money sanctioned by TAHDCO is recovered with four per cent interest from the beneficiaries by the banks along with their bank loans and later remitted to the TAHDCO. A sum of Rs.46.80 lakh has been released by TAHDCO as Margin Money so far, of which Rs.17.52 lakhs have been recovered.

Special Central Assistance Scheme

Light House Kuppam Fishermen Co-operative society

The government have also sanctioned a sum of Rs.3.20 lakh as 50 per cent subsidy from the Special Central Assistance, and also 0.80 lakh as margin money for provision of infrastructrual facilities from out of the total cost of Rs.6.62 lakh to the Light House Kuppam Fishermen Co-operative Society (Adi-dravidars).

Kollancheri Labour Contract Co-operative Society

The government in the year 1982 sanctioned subsidy from the Special Central Assistance and also loan to the Kollancheri Adi-Dravidar labour Contract Society for purchase of stone crusher and lorry as detailed below:

	Total cost Rs.	*Subsidy* Rs.	*Loan* Rs.
Stone Crusher	1,00,000/-	50,000/-	50,000/-
Lorry	1,70,000/-	85,000/-	85,000/-
Total	2,70,000/-	1,35,000/-	1,35,000/-

The society is earning for the past three years without interruption. The society has also repaid a sum of Rs.62,000/- so far. One hundred Adi-dravidar beneficiaries are benefited by way of regular substantial income by this scheme.

Uthukottai Envelop Polythene Bag Co-operative Society

A sum of Rs.2.50 lakh as 50 per cent subsidy from Special Central Assistance and a sum of Rs.1.25 lakh as margin money is released for the expansion of the business of the Uthukottai Envelop and Polythene Bags Industrial Cooperative Society by providing additional employment opportunity to 50 Adi-Dravidars workers, the total cost of which is 5 lakh. Fifty one Adi dravidar beneficiaries have secured regular employment in the society and they are earning an income of more than Rs.400/- p.m.

Kancheepuram Kamatchi Amman Co-operative Spinning Mills

A sum of Rs.15 lakh had been sanctioned to Kancheepuram Kamatchi Amman Co-operative Spining Mills from Special Central Assistance for providing regular employment to 100 Adi-Dravidar beneficiaries. These 100 Adi-Dravidar beneficiaries have been employed in the mills on regular monthly salary[83].

Milch Animals Scheme

During the years 1985-86 and 1986-87, a sum of Rs.6.66 lakh and 3.00 lakh respectively were spent through Dairy Development Department towards the 50 per cent subsidy for the supply of Milch Animals to Hindu Adi-dravidars.

Subsidised Sale of Inputs to Adi-Dravidar farmers

During 1986-87, a sum of Rs.1,09 lakh was spent to the Adi-dravidar farmers through the Agriculture Department under the subsidised sale of inputs to Adi-dravidar farmers.

Supply of Sheep Unit

During the year 1985-86, a sum of Rs.4.94 lakh was spent as first instalment of subsidy for the establishment of 200 sheep units in the district. Various self sufficiency schemes and poverty alleviation programmes implemented (scheme-wise and pachayat union wise) have been dealt with in greater detail in the chapter on "Local Self Government".

Model Village Scheme

Vilagam village in the Thirukazhukundram block has been chosen as model village for all-round development under the Central Government's Scheme for the development of backward areas. Vilagam is one of the 24 villages selected in the country and only one in Tamil Nadu. The main activity of the village is handloom weaving. A sum of Rs.25 lakh has been allotted for the development of the village[84].

APPENDIX - I

Registered Motor Vehicles both Commercial and Non-Commercial in the district[85]

Registered Motor Vehicles (Commercial) 1991-1992

1.	State Carriages	608
2.	Auto Rickshaws	3086
3.	Taxis including Tourist Taxis	401
4.	Luxury Coaches, Omni buses and Private Transport Vehicles including School buses	72
5.	Goods Vehicles	3727
6.	Tractors	3456
7.	Others	2567
	Total	13917

Registered Motor Vehicles (Non-Commercial)

1.	Motor Cycles (Two Wheelers)	23374
2.	Cars	10500
3.	Jeeps and Station Wagons	309
4.	Goods Vehicles	485
5.	Tractors and Trailors	370
6.	Others	189
	Total	35227

APPENDIX - 2

Distribution of 1000 households living in Census Houses used wholly or partly as dwellings by predominant material of wall - a comparative picture of state and the district [86]

Wall material	Total		Rural		Urban	
	State	District	State	District	State	District
1. Mud	625	724	742	788	385	467
2. Burnt bricks	229	219	144	164	481	437
3. Stone	70	41	69	35	76	66
4. Unburnt bricks	24	8	22	8	31	7
5. Grass, leaves reeds or bamboo	10	2	9	N	12	9
6. Corrugated iron or other metal sheets	5	N	5	N	2	N
7. Timber	2	N	2	N	1	N
8. Cement concrete	2	1	1	1	6	6
9. Other materials	2	N	2	N	3	N
10. Wall, material not stated	4	5	4	4	3	8

'N' means - Negligible

APPENDIX - 3

Distribution of 1000 households living in Census Houses used wholly or partly as dwellings by predominant material of roof - a comparative picture of state and the district [87]

Roof material	Total		Rural		Urban	
	State	District	State	District	State	District
1. Grass, leaves, reeds, thatch, weed or bamboo	579	707	664	785	325	395
2. Tiles, Slate shingle	328	250	276	193	481	475
3. Brick & Lime	44	18	22	2	109	85
4. Concrete & Stone Slabs	25	18	19	16	46	27
5. Corrugated iron, line or other metal sheets	15	1	11	N	5	6
6. Asbestos Cement sheets	2	1	1	N	5	6
7. All other material	4	N	4	N	4	N
8. Roof material not stated	3	5	3	4	3	9

'N' means - Negligible

APPENDIX - 4

Distribution of 1000 households according to wall material (as per 1961 Census) [88]

Sl. no.	Wall material	District	Taluks: Ponneri	Tiruvallur	Tiruttani	Sripe-rumbudur	Sai-dapet	Chengal-pattu	Kanchee-puram	Maduran-takam
1	2	3	4	5	6	7	8	9	10	11
1.	Mud	724	846	748	728	671	599	731	670	853
2.	Burnt bricks	219	134	196	224	178	307	239	280	128
3.	Stone	41	16	48	28	126	67	21	13	14
4.	Unburnt bricks	8	1	5	18	10	2	2	25	1
5.	Grass, leaves, reeds for bamboo	2	N	N	N	5	8	N	N	N
6.	Cement concrete	1	N	N	N	N	7	N	N	1
7.	Timber	N	0	0	0	0	N	0	N	0
8.	G.I. sheets or other metal sheets	N	0	0	0	0	N	0	2	0
9.	All other materials	N	0	1	0	1	N	0	0	0

APPENDIX - 5

Distribution of 1000 households according to roof material

Sl. no.	Roof material	District	Taluks							
			Ponneri	Tiruvallur	Tiruttani	Sripe-rumbudur	Sai-dapet	Chengal-pattu	Kanchee-puram	Madurantakam
1	2	3	4	5	6	7	8	9	10	11
1.	Grass, leaves, reeds, thatch, wood or bamboo	707	832	771	758	645	617	720	534	853
2.	Tiles, slate, shingle	250	147	199	215	319	286	235	419	127
3.	Brick and lime	18	4	10	9	10	39	13	39	5
4.	Concrete and stone slab	18	14	16	16	15	36	26	5	13
5.	Corrugated iron, zinc, or other metal sheets	1	N	N	N	1	3	1	1	0
6.	Asbestos cement sheets	1	N	N	N	0	8	N	N	N
7.	All other materials	N	0	N	0	N	N	0	0	N
8.	Roof material not stated	5	3	4	2	10	11	5	2	2

APPENDIX - 6

Proportions of households occupying three and more roomed houses per 1000 households[89]

Sl. no.	Taluk	Rural Sector	Urban Sector
1	2	3	4
1.	Ponneri	52	139
2.	Tiruvallur	79	181
3.	Tiruttani	68	137
4.	Sriperumbudur	99	205
5.	Saidapet	93	193
6.	Chengalpattu	86	221
7.	Kancheepuram	123	197
8.	Madurantakam	74	129
9.	District Average	83	189

APPENDIX - 7

Number of persons for households

Sl. no.	Taluk	Total	Rural	Urban
1	2	3	4	5
1.	Ponneri	4.66	4.52	4.64
2.	Tiruvallur	4.66	4.64	4.98
3.	Tiruttani	4.63	4.60	4.86
4.	Sriperumbudur	4.82	4.72	5.41
5.	Saidapet	4.75	4.80	4.74
6.	Chengalpattu	4.78	4.77	4.83
7.	Kancheepuram	4.59	4.67	4.43
8.	Madurantakam	4.76	4.76	4.75
	District Average	4.69	4.68	4.72

APPENDIX - 8

Average number of persons per room in different houses[90]

Sl. no.	*Taluk*	*Average number of persons per room in house with*					
		All cases combined	*One room*	*Two rooms*	*Three rooms*	*Four rooms*	*Five rooms and above*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Ponneri	3.55	4.28	2.61	2.05	1.71	1.04
2.	Tiruvallur	3.33	4.33	2.71	1.98	1.60	1.27
3.	Tiruttani	3.31	4.41	2.83	2.12	1.85	1.26
4.	Sriperumbudur	3.05	4.24	2.54	1.96	1.63	2.00
5.	Saidapet	2.82	4.20	2.55	1.92	1.64	1.30
6.	Chengalpattu	3.02	4.26	2.65	1.91	1.77	1.34
7.	Kancheepuram	2.80	4.03	2.52	1.89	1.71	1.23
8.	Madurantakam	3.30	4.34	2.75	2.06	1.56	1.07
9.	Chengai-Anna Dist.	3.10	4.23	2.63	1.96	1.67	1.37
10.	Tamil Nadu State	3.03	4.21	2.58	1.91	1.59	1.16

APPENDIX - 9

Census Houses and the uses to which they are put (as per 1981 Census)[91]

1.	Total no. of census houses	...	8,32,505
2.	Census Houses Vacant at the time of House listing	...	42,375
3.	Occupied Census houses used as :-		
i.	Residence	...	6,58,560
ii.	Shop-*cum*-residence	...	8,050
iii.	Workshop-*cum*-residence including Household industry.	...	26,345
iv.	Hotel, Dharmasalas, Tourist Houses and Inspection House.	...	585
v.	Shops excluding Eating houses	...	19,885
vi.	Business Houses and Offices	...	3,185
vii.	Factories, Workshops and Worksheds	...	12,955
viii.	Restaurants, sweet, meat shops and eating places	...	4,030
ix.	Places of entertainment and community gathering places	...	1,270
x.	Places of worship in temple, church, mosque and Gurudwara etc.	...	10,340
xi.	Others	...	44,925
	Total		8,32,505

APPENDIX - 10

Number of Household per 100 occupied Residential Houses - 1981[92]

Total	-	103
Rural	-	101
Urban	-	106

Households Classified by number of members and by number of rooms occupied (as per 1971 Census)[93]

1.	Total no. of Census households		-	5,48,600
2.	Total no. of members	(a) Males	-	13,85,175
		(b) Females	-	13,26,410
3.	Total no. of rooms		-	8,93,965
4.	Household with one room		-	3,38,145
		(a) Males	-	7,55,585
		(b) Females	-	7,31,220
5.	Households with two rooms		-	1,34,695
		(a) Males	-	3,75,830
		(b) Females	-	3,54,800
6.	Households with three rooms		-	41,490
		(a) Males	-	1,33,035
		(b) Females	-	1,25,920
7.	Households with four rooms		-	20,000
		(a) Males	-	68,305
		(b) Females	-	64,000
8.	Households with five rooms		-	13,240
		(a) Males	-	52,330
		(b) Females	-	50,370
9.	Households with unspecified number of rooms		-	10
		(a) Males	-	100
		(b) Females	-	100
10.	No. of households with details unspecified		-	1,015

APPENDIX - 11

Urban Agglomerations[94]

S. no.	*Name*	*Status of Town*	*Area in sq.km. (As per 1981 Census)*	*Total persons (As per 1991 Census)*
1	*2*	*3*	*4*	*5*
1.	Tiruvothiyur	M	21.37	1,67,851
2.	Avadi	M.T.S.	25.62	1,80,291
3.	Ambattur	M.T.S.	38.99	2,23,332
4.	Alandur	M	6.64	1,25,009
5.	Tambaram	M	20.72	1,06,590
6.	Pallavaram	M	18.00	1,11,194
7.	Madhavaram	M.T.S.	29.53	1,19,005
8.	St. Thomas Mount-*cum*-Pallavaram	Cantt.	11.18	39,469
9.	Pammal	T.P.	5.19	36,334
10.	Poonamallee	T.P.	6.61	28,319
11.	Kathivakkam	M.T.S.	4.76	27,088
12.	Thiruverkadu	P.T.S.	18.59	22,409
13.	Kunnathur	T.P.	12.16	22,567
14.	Anakaputhur	T.P.	2.98	25,314
15.	Naravarikuppam	T.P.	20.75	17,422
16.	Thirumazhisai	T.P.	4.53	13,476
17.	Chithalapakkam	T.P.	2.88	16,581
18.	Thinnanur	T.P.	14.57	19,326
19.	Thiruneermalai	T.P.	5.88	16,705
20.	Puzal	T.P.	6.75	16,678
21.	Nandambakkam	T.P.	2.69	9,872
22.	Maduravayal	T.P.	4.78	16,180
23.	Perungalathur	T.P.	7.02	10,917
24.	Nerkundram	V.P.	2.65	20,805
25.	Peerkankaranai	T.P.	1.75	10,801
26.	Polichalur	V.P.	2.47	9,805
27.	Thirusulam	V.P.	2.41	5,161
28.	Vellanur	V.P.	15.97	5,305
29.	Perungudi	V.P.	4.66	9,676

1	2	3	4	5
30.	Sennirkuppam	V.P.	2.53	5,523
31.	Nazarethpettai	V.P.	1.15	4,823
32.	Pallikaranai	V.P.	17.42	7,577
33.	Kottivakkam	V.P.	2.47	11,846
34.	Meenambakkam	V.P.	3.03	3,807
35.	Nadukkuthagai	V.P.	1.67	4,476
36.	Lattupakkam	V.P.	2.62	4,657
37.	Chembarambakkam	V.P.	6.99	4,380
38.	Mathur	V.P.	4.12	4,912
39.	Kannapalayam	V.P.	6.35	3,283
40.	Melmambedu	V.P.	3.56	2,450
41.	Madipakkam	V.P.	5.63	12,573
42.	Sonanjere	V.P.	1.22	3,154
43.	Kathirvedu	V.P.	1.59	3,392
44.	Varadharajapuram	V.P.	1.97	2,530
45.	Vengavasal	V.P.	5.39	3,341
46.	Nemilicheri	V.P.	1.72	2,487
47.	Sadayankuppam	V.P.	6.95	3,545
48.	Mudichur	V.P.	3.45	1,922
49.	Ullagaram	V.P.		15,548
50.	Sembakkam	T.P.		13,832
51.	Valasaravakkam	T.P.		20,658
52.	Porur	T.P.		19,954
53.	Parianallur	V.P.		17,998
54.	Karampakkam	V.P.		9,925
55.	Chinnusukkadu	T.P.		9,020
56.	Manali	P.T.S.		5,745

Note :	M.T.S.	=	Municipal Township
	P.T.S.	=	Panchayat Township
	T.S.	=	Township
	V.P.	=	Village Panchayat
	T.P.	=	Town Panchayat

APPENDIX - 12

Occupational Pattern

The occupational pattern of people as per 1981 Census is as follows[95]

Sl.no.	*Occupation*	*No. of persons*	*Percentage*
1.	Cultivators	2,86,786	20.72
2.	Agricultural Labourers	4,09,789	29.60
3.	Household Industry	78,733	5.68
4.	Other workers	4,89,315	35.34
5.	Marginal workers	1,19,863	8.66
	Total	13,84,486	100.00

APPENDIX - 13

Size of Land holdings, number of land owners and the area in each category[96]

Sl. no. *1*	*Size* (in ha.) *2*	*Number of land owners* *3*	*Area in lakh* (in ha.) *4*
1.	Below 0.5	2,32,089	0.59
2.	0.5 - 1.0	88,651	0.66
3.	1.0 - 2.0	66,832	0.92
4.	2.0 - 3.0	24,855	0.60
5.	3.0 - 4.0	11,361	0.39
6.	4.0 & above	17,874	1.27
	Total	4,41,662	4.43

APPENDIX - 14

Assets Composition of Rural Housholds

(Average - Percentage)

(In rupees)

Income group	Number of house-holds	Land value	Building value	Well and structure	Live-stock	Farm equip-ment	Financial Assets	Gold and silver	Consumer durable	Total
Low	48	7652	15728	1549	4434	1491	-	2251	3077	36182
	(32.00)	(21.15)	(43.47)	(4.28)	(12.25)	(4.12)		(6.22)	(8.51)	(100.0)
Lower Middle	54	53122	41224	7534	4837	4829	-	7143	12823	131512
	(36.00)	(40.39)	(31.35)	(5.73)	(3.68)	(3.67)		(5.43)	(9.75)	(100.0)
Upper Middle	28	160229	71168	19324	12978	23877	-	12337	25509	325422
	(18.67)	(49.24)	(21.87)	(5.94)	(3.98)	(7.34)		(3.79)	(7.84)	(100.0)
High	20	327595	94265	41180	15984	62310	9875	12983	36722	600914
	(13.33)	(54.52)	(15.69)	(6.85)	(2.66)	(10.37)	(1.64)	(2.16)	(6.11)	(100.0)
Overall	150	95162	45727	12306	7714	14981	1317	7326	15258	199791
	(100.0)	(47.63)	(22.89)	(6.16)	(3.86)	(7.50)	(0.65)	(3.67)	(7.64)	(100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 15

Assets Composition of Rural Housholds

(Average - Percentage)

Income group	Number of house-holds	Ag. land value	Urban land value	Building	Well and structure	Livestock	Equip-ment	Finan-cial asset	Busi-ness invest-ment	Gold & silver	Con-sumer dura-bles	Total
					(In rupees)							
Low	44 (29.33)	341 (1.38)	193 (0.78)	17261 (70.06)	-	60 (0.24)	-	912 (3.70)	653 (2.65)	2319 (9.41)	2898 (11.80)	24637 (100.0)
Lower Middle	61 (40.67)	6943 (6.35)	4369 (3.98)	52885 (48.21)	2959 (2.70)	277 (0.25)	-	8039 (7.33)	10230 (9.33)	8486 (7.74)	15510 (14.13)	109698 (100.0)
Upper Middel	31 (20.67)	17032 (9.17)	9129 (4.91)	82815 (44.59)	5887 (3.17)	129 (0.07)	-	16947 (9.12)	15252 (8.21)	12791 (6.89)	25760 (13.87)	185742 (100.0)
High	14 (9.33)	26714 (9.44)	12286 (4.34)	108500 (38.36)	7696 (2.73)	625 (0.22)	7857 (2.78)	41274 (14.59)	29571 (10.45)	16482 (5.83)	31853 (11.26)	282858 (100.0)
Overall	150 (100.0)	8937 (7.66)	4867 (4.17)	53812 (46.14)	3138 (2.69)	216 (0.19)	733 (0.63)	10890 (9.34)	10264 (8.80)	8312 (7.13)	15455 (13.25)	116624 (100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 16

Assets - Totals, Average and Per Capita

(In Rupees)

Details	Low Income Group		Lower Middle Income Group		Upper Middle Income Group		High Income Group		Total	
	Rural	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*
Total Assets	17,36,710	10,84,015	71,01,690	66,92,203	91,11,815	57,57,995	120,18,280	39,60,040	299,68,495	174,94,253
Average Assets	36,182	24,637	1,31,512	1,09,698	3,25,422	1,85,742	6,00,914	2,82,858	1,99,790	1,16,628
Per Capita Assets	7,454	5,828	28,237	24,073	58,037	37,029	1,11,280	50,770	39,985	25,081

APPENDIX - 17

Sources of Income among the Rural Households

(Average - Percentage)

Income Group	Number of households	Agricultural Income	Livestock	Salaries	Wages	Rent received	Profits from business	Interest on investment	Others	Total
Low	48 (32.00)	881 (9.69)	1398 (15.37)	1335 (14.68)	4524 (49.75)	26 (0.29)	275 (3.03)	-	654 (7.19)	9093 (100.0)
Lower	54 (36.00)	4946 (29.04)	465 (2.72)	8129 (47.73)	572 (3.36)	1240 (7.28)	967 (5.68)	-	713 (4.19)	17032 (100.0)
Upper Middle	28 (18.67)	17203 (58.93)	-	5318 (18.22)	-	5322 (18.23)	1350 (4.62)	-	-	29193 (100.0)
High	20 (13.33)	43829 (70.40)	-	1272 (2.04)	-	10421 (16.74)	3325 (5.34)	1053 (1.69)	2360 (3.79)	62260 (100.0)
Overall	150 (100.0)	11118 (48.78)	615 (2.70)	4516 (19.81)	1654 (7.26)	2838 (12.45)	1131 (4.96)	140 (0.61)	780 (3.43)	22792 (100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 18

Sources of Income among the Urban households

(Average - Percentage)

Income Group	Number of households	Agricul-tural Income	Livestock	Salaries	Wages	Rent received	Profits from business	Interest on investment	Others	Total
					(In rupees)					
Low	44	-	101	974	3487	-	3608		41	8211
			(1.23)	(11.86)	(42.47)		(43.94)		(0.50)	(100.0)
Lower Middle	61	614	344	5337	1054	308	9878	73	536	18144
		(3.38)	(1.89)	(29.41)	(5.81)	(1.70)	(54.45)	(0.40)	(2.96)	(100.0)
Upper Middle	31	2137	271	10416	-	1366	13043	931	584	28748
		(7.43)	(0.94)	(36.23)		(4.76)	(45.37)	(3.24)	(2.03)	(100.0)
High	14	5473	-	18289	-	129	20817	871	1929	47508
		(11.52)		(38.50)		(0.27)	(43.82)	(1.83)	(4.06)	(100.0)
Overall	150	1202	225	6316	1452	420	9713	304	530	20162
		(5.96)	(1.12)	(31.33)	(7.20)	(2.08)	(48.17)	(1.51)	(2.63)	(100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 19

Income - Rural and Urban (Total, average and per capita in rupees)

Classification of income	*Low Income Group*		*Lower Middle Income Group*		*Upper Middle Income Group*		*High Income Group*		*Total*	
	Rural	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*
Total Income	436470	361291	919722	1106766	817396	891180	1245216	665100	3418804	3024337
Average Income	9093	8211	17032	18144	29193	28748	62260	47508	22792	20162
Per Capita Income	1873	1942	3657	3981	5206	5731	11530	8527	4561	4338

APPENDIX - 20

Expenditure - Household Pattern Among the Rural Households

(Average - Percentage)

Income Group	Food	Marriage ceremonies & festival	Clothing footwear & cosmetics	Education	Medical	Recreation entertainment	Travel	Intoxicants	Rent fuel & power	Others	Total
Low	4229	364	1033	394	194	209	282	605	1457	403	9170
	(46.12)	(3.97)	(11.25)	(4.30)	(2.12)	(2.28)	(3.08)	(6.60)	(15.89)	(4.39)	(100.0)
Lower	6098	856	2082	1246	414	405	663	264	2450	577	15056
Middle	(40.50)	(5.69)	(13.83)	(8.27)	(2.76)	(2.69)	(4.41)	(1.75)	(16.27)	(3.83)	(100.0)
Upper	9308	2748	3599	2286	556	636	1414	375	4050	817	25790
Middle	(36.09)	(10.66)	(13.96)	(8.86)	(2.16)	(2.47)	(5.48)	(1.45)	(15.70)	(3.17)	(100.0)
High	10750	2402	3835	5560	840	1030	1315	766	4113	1583	32194
	(33.39)	(7.42)	(11.91)	(17.27)	(2.61)	(3.20)	(4.08)	(2.38)	(12.78)	(4.92)	(100.0)
Overall	6720	1258	2263	1743	427	469	768	461	2652	700	17461
	(38.48)	(7.20)	(12.96)	(9.98)	(2.45)	(2.69)	(4.40)	(2.65)	(15.19)	(4.00)	(100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 21

Expenditure pattern among the Urban households

(Average in Rupees)

Income Group	Food	Marriage ceremonies & festival	Clothing footwear & cosmetics	Education	Medical	Recreation entertainment	Travel	Intoxicants	Rent fuel & power	Others	Total
Low	4005	213	754	321	218	223	147	713	1241	191	802
	(49.90)	(2.65)	(9.39)	(4.00)	(2.73)	(2.78)	(1.83)	(8.88)	(15.46)	(2.38)	(100.0)
Lower Middle	6656	717	1785	946	372	364	486	761	2870	621	15575
	(42.73)	(4.60)	(11.46)	(6.07)	(2.39)	(2.34)	(3.12)	(4.89)	(18.42)	(3.98)	(100.0)
Upper Middle	8055	1320	2222	1889	592	618	956	764	3989	709	21114
	(38.15)	(6.25)	(10.52)	(8.95)	(2.80)	(2.93)	(4.53)	(3.62)	(18.89)	(3.36)	(100.0)
High	10954	2214	3608	1584	941	849	476	1012	5493	1470	28605
	(38.30)	(7.74)	(12.61)	(5.54)	(3.29)	(2.98)	(1.66)	(3.54)	(19.20)	(5.14)	(100.0)
Overall	6568	833	1743	1017	426	420	483	771	2868	593	15722
	(41.78)	(5.30)	(11.09)	(6.47)	(2.71)	(2.67)	(3.07)	(4.90)	(18.24)	(3.77)	(100.0)

APPENDIX - 22

Household Expenditure - Total, average & per capita

	Low Income group		*Lower Middle*		*Upper Middle*		*High*		*Total*	
	Rural	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*
Total Expenditure	440143	353092	813003	950275	722132	654521	643882	400447	2619160	2358335
Average	9170	8026	15056	15578	25790	21114	32194	28603	11461	15722
Percapita	1889	1898	3233	3418	4600	4209	5962	5134	3495	3381

APPENDIX - 23

Assets, Income, Expenditure, Savings, Investment details

(Low Income - Rural)

Sl. no.	Assets	Total income	Total expenditure	Net income	Household consumer expenditure	Savings	Financial investment	Physical investment	Total investment	Disinvestment	Borrowing	Capital transfers
1	2	3	4	5	6	7	8	9	10	11	12	13
				(2-3)		(4-5)			(7-8)			
1	22705	10905	1530	9375	8194	1181	1050	1850	2900	-	3000	
2	33335	13150	1775	11375	11955	-580	250	1200	1450	2100	1300	
3	17930	9040	1750	7290	8032	-742	700	1600	2300	-	600	
4	12090	9025	1825	7200	6480	720	-	1500	1500	-	1500	
5	67565	9720	2813	6907	7323	-416	550	500	1050	-	1100	
6	95325	18145	9519	8626	10204	-1578	1675	1500	3175	-	3500	
7	11255	9585	1525	8060	10415	-2355	1650	-	1650	-	2450	
8	24230	11500	-	11500	10750	750	1100	800	1900	-	800	
9	10140	10478	1020	9458	7836	+1622	-	2800	2800	500	1200	
10	10870	7825	685	7140	7538	-398	250	900	1150	-	1200	

APPENDIX - 23 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
11	117800	12430	2220	10210	8177	2033	1000	-	1000	-	-	
12	132670	19225	10053	9172	11552	-2380	-	3250	3250	1500	2250 @	
13	10150	9436	900	8536	5838	2698	-	1600	1600	-	1500	
14	124300	18410	8546	9864	12024	-2166	-	1100	1100	-	1500	
15	12125	10800	-	10800	12241	-1441	650	-	650	-	-	Nil
16	12350	10315	300	10015	9632	383	120	-	120	-	3200	
17	10735	10660	300	10360	8918	1442	100	1800	1900	-	550	
18	17980	9605	2225	7380	10846	-3466	150	-	150	-	2150	
19	33860	11100	-	11100	13720	-2620	360	-	360	-	750	
20	12820	13730	2050	11680	11030	650	1200	-	1200	-	2000	
21	101180	21000	9065	11935	13445	-1510	250	2150	2400	-	3000	
22	19970	10030	3700	7130	9240	-2110	-	150	150	-	700	
23	32100	10270	2600	7670	8944	-1274	-	1600	1600	-	1200	
24	41360	12000	1900	10100	8674	1426	200	-	200	-	1550	
25	14880	12155	1825	10330	8345	1985	-	-	-	-	1500	
26	15070	10170	1630	8540	8575	-35	450	350	800	-	2400	
27	15260	10820	1150	9670	8840	830	300	420	720	-	2000	
28	12955	8542	1000	7542	7596	-54	-	1500	1500	-	1500	
29	39300	10200	-	10200	14472	-4272	360	-	360	-	-	
30	9435	7626	535	7091	6258	833	325	850	1175	-	250	
31	35815	14445	3685	10760	6677	4083	150	3100	3250	-	1500	
32	35665	11400	15	11385	10865	520	2125	1200	3325	-	2250	
33	33145	10700	87	10613	7685	2928	300	-	300	-	2200	
34	8110	6510	733	5777	6277	-500	150	500	650	-	1200	

APPENDIX - 23 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
35	125990	19100	8143	10957	12320	-1363	11250	1850	3100	1250	3950	
36	9145	5500	738	4752	5835	-1083	-	2150	2150	-	2150	
37	36305	12288	795	11493	12780	-1287	500	4800	5300	-	-	4500
38	123830	14525	4645	9880	7178	2702	2250	30000	32250	-	28000	
39	11235	7596	320	7276	7688	-412	500	1500	2000	-	3800	
40	7155	8400	350	8050	6320	1730	-	1300	1300	-	1450	
41	53775	14400	3100	11300	10165	1135	2525	1500	4025	-	-	2000
42	11390	8496	1440	7056	7830	-774	-	1800	1800	-	1500	
43	12150	8320	1880	6440	6680	-240	-	1200	1200	-	1800	
44	21600	12290	3700	8590	7892	698	200	-	200	-	-	
45	32410	11110	3700	7410	8320	-910	125	-	125	-	-	
46	59795	11535	650	10885	10312	573	2725	-	2725	-	-	
47	12400	6950	-	6950	8463	-1513	500-	-	500	-	-	
48	15050	10640	-	10640	9760	880	730	800	1530	-	-	
Total	1736710	542902	106482	436470	440143	-3673	26720	79120	105840	5350	94450	6500
Ave.	36182	11310	2218	9093	9170	-77	557	1648	2205	111	1968	135
Per Capita	7454	2330	457	7873	1889	-16	115	340	464	23	405	28

APPENDIX - 23 *(Cont.)*

Lower Middle - Rural

Assets	Total income	Total expenditure	Net income	Household consumer expenditure	Savings	Financial investment	Physical investment	Total investment	Dis-investment	Borrowing	Capital transfers
1	2	3	4	5	6	7	8	9	10	11	12
			(2-3)		(4-5)			(7+8)			
155105	21250	9036	12214	14608	-2394	5000	3750	8750	-	1500	-
104400	19000	125	17875	14672	3203	1950	5000	6950	-	-	3000
132430	23575	135	23440	15625	7815	6000	8000	14000	-	-	5000
35160	18300	-	18300	18280	20	1300	1800	3100	-	-	-
65560	21600	75	21525	12636	8889	3600	3200	6800	-	-	3000
89175	15775	1135	14640	14430	210	2100	-	2100	-	900	-
313100	52380	31177	21203	18830	2373	5300	9600	14900	6000	8000	2450
114615	21800	155	21645	17140	4505	4100	1550	5650	-	1500	-
128955	22525	10310	12215	16650	-4435	3700	5000	8700	-	4050	-
109395	29150	7128	22022	15410	6612	2050	1300	3350	-	3300	-
22000	18000	-	18000	13325	4675	2600	-	2600	-	2800	-
176000	31640	12285	19355	21585	-2230	3500	2000	5500	-	2000	-

APPENDIX - 23 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12
353700	63740	39805	23935	21165	2770	4100	3600	7700	-	9800	-
30000	22800	-	22800	13765	9035	3200	20000	23200	14000	3000	4800
164400	23200	7898	15302	14312	990	1400	-	1400	-	1500	-
36650	13200	-	13200	9727	3473	2120	2200	4320	-	-	-
219500	36080	17211	18869	11170	7699	1100	4800	5900	-	1750	-
128570	24250	10980	13250	15562	-312	1700	3700	5400	-	3500	-
151395	18225	180	18045	16610	1435	5250	-	5250	-	2000	-
112575	19525	135	19390	18210	1180	1900	-	1900	-	-	-
150765	25700	11630	14070	13375	695	375	1300	1675	-	2750	-
117400	21600	90	21510	15765	5745	3500	-	3500	-	5000	-
148500	30330	12437	17893	13390	4503	3800	-	3800	-	-	-
193450	35535	18111	17424	14125	3299	4000	1800	5800	-	11000	-
337800	40800	21770	19030	17860	1170	5200	2400	7600	-	3500	200
44180	16800	-	16800	10724	6076	2650	900	3550	-	-	2000
186645	23590	10785	12805	9408	3397	1250	1200	2450	-	3000	-
9185	15672	1135	14537	6260	8277	2950	1250	4200	-	625	-
70900	13700	-	13700	9462	4238	7600	4000	11600	-	-	-
48325	26790	8340	18450	11064	7386	1750	1500	3250	700	2500	-
122055	23850	7625	16225	14272	1953	3725	4350	8075	-	3000	3000
15950	16717	1095	15622	9856	5766	3500	1500	5000	1000	300	-
33200	15870	-	15870	14028	1842	1915	3525	5440	-	-	3500
84370	17665	875	16790	12828	3962	2300	12700	15000	15000	-	2000
224145	31265	14175	17090	14682	2408	2515	2500	5015	1500	1500	-
255320	27290	15110	12180	15192	(-)3012	625	-	625	-	-	-

APPENDIX - 23 *(Cont.)*

	1	2	3	4	5	6	7	8	9	10	11	12
	139100	27030	8205	18825	16010	2815	2250	3200	5450	-	2500	-
	43675	18600	-	18600	15296	3304	2300	1500	3800	-	-	700
	111300	24825	9872	14953	29562	(-)14609	1600	3200	4800	-	-	3000
	48780	19200	1800	17400	16576	824	2465	3000	5465	-	2500	-
	49360	19290	3513	15777	24784	(-)9007	3875	500	4375	-	-	3200
	119070	22530	9744	12786	13894	(-)1108	2365	800	3165	-	-	-
	90150	17575	235	17340	12820	4520	3950	-	3950	3000	1500	2000
	293100	29285	12015	17270	20036	(-)2766	725	3000	3725	-	5000	-
	403650	36800	20625	16175	20114	(-)3939	2400	-	2400	-	-	-
	189850	27560	12605	14955	12820	2135	800	6400	7200	-	-	-
	155350	20000	7400	12600	13700	1100	2200	-	2200	-	-	-
	144500	20400	900	19500	15700	3800	2500	-	2500	-	-	60
	32000	16200	-	16200	13260	2940	3000	-	3000	-	-	-
	32750	16860	4420	12440	14125	(-)1685	950	3600	4550	-	-	-
	235300	35655	15130	20525	14225	6300	2000	10800	12800	-	5000	-
	239650	37710	19655	18055	17802	253	2750	5000	7750	-	900	-
	8730	12600	-	12600	13340	(-)740	1750	-	1750	-	-	-
	80500	18000	1500	16500	14936	1564	3100	-	3100	-	-	-
a.	7101690	1318289	398567	919722	813003	106719	150605	155425	306030	41200	96175	37910
b.	131512	24413	7381	17032	15056	1976	2789	2878	5667	763	1781	702
c.	28237	5242	1585	3657	3233	424	599	618	1217	164	382	151

a. Total b. Average c. Per capita

APPENDIX - 23 *(Cont.)*

Assets, Income, Expenditure, Savings, Investment details

(Upper Middle - Rural)

Sl. no.	Assets	Total income	Total expenditure	Net income	Household consumer expenditure	Savings	Financial investment	Physical investment	Total investment	Dis-investment	Borrowing	Capital transfers
1	2	3	4	5	6	7	8	9	10	11	12	13
			(2-3)		(4-5)					(7-8)		
1	376785	78525	44645	33880	31910	1970	1300	1700	3000	950	6000	-
2	340585	59720	27958	31762	61912	-30150	2125	-	2125	12000	5000	-
3	397190	54075	25390	28685	18228	10457	5250	21500	26750	-	20000	-
4	482600	82550	40072	34478	24544	9934	6700	5350	12050	-	3000	-
5	194675	36135	11895	24240	16284	7956	3950	9600	13550	3000	1500	-
6	441600	62860	34602	28258	25662	2596	3500	4800	8300	-	10000	-
7	420760	52395	20880	31515	20104	11411	7250	6750	14000	3200	1500	-
8	311360	47650	23620	21030	19508	1522	2800	4750	7250	1500	1425	-
9	109985	39600	13800	25800	16408	9392	12500	5100	17600	-	3500	-
10	361300	54690	22465	32225	30620	1605	6750	4500	11250	-	17000	-
11	301460	56700	24490	32210	23880	8330	5250	6000	11250	-	6500	-

APPENDIX - 23 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
12	529735	88650	53530	35120	39095	-3975	1850	-	1850	-	7000	-
13	297995	60200	26455	33745	33510	235	3220	3000	6220	-	2000	-
14	384800	58200	27665	30535	32430	-1895	2000	-	2000	-	39000	-
15	59655	51700	27415	24285	28796	-4511	3900	-	3900	-	-	3000
16	30550	25400	-	25400	16878	8522	7300	3200	10500	-	-	-
17	442300	62835	36812	26083	30208	-4185	2000	1800	3800	-	10000	-
18	86760	29000	35	28965	24740	4225	3850	2500	7350	-	2000	2000
19	25300	26400	-	26400	20420	5980	5600	-	5600	-	1500	-
20	416505	69450	33655	35795	25554	10241	11500	-	11500	-	8000	-
21	100750	25200	-	25200	18432	6768	10400	-	10400	-	-	100
22	564445	68880	35813	33067	19686	13381	12400	-	12400	-	7000	-
23	438150	54100	24552	29548	23198	6350	6600	4000	10600	-	4100	-
24	424515	61800	30400	31400	26650	4750	6000	2500	8500	-	6500	-
25	385715	54675	25950	28725	29850	-1125	2350	4300	6650	-	4000	-
26	309810	48475	23950	23525	22981	544	4220	1500	5700	-	8500	-
27	190820	35950	10575	25375	14230	11145	3100	24000	27100	-	15500	-
28	386670	63375	33170	30205	26414	3791	1950	1500	3450	-	1250	-
Total	9111915	1505190	687794	817396	722132	95264	145295	118350	263645	20650	191775	5100
Average (28)	325422	53757	24564	29193	25190	3402	5189	4227	9416	738	6849	182
Per Capita (157)	58037	9587	4381	5206	4600	607	925	754	1679	132	1221	32

APPENDIX - 24

Assets, Income, Expenditure, Savings, Investment details

(High Income - Rural)

Sl. no.	Assets	Total income	Total expenditure	Net income	House-hold consu-mer expenditure	Savings	Finan-cial invest-ment	Physi-cal invest-ment	Total invest-ment	Dis-invest-ment	Borro-wing	Capi-tal trans-fers
	1	2	3	4	5	6	7	8	9	10	11	12
			(2-3)		(4-5)			(7+8)				
1	551480	118250	63403	54847	29425	25422	10000	15650	25650	-	3000	-
2	420285	64885	26059	38826	19548	19278	8900	15000	23900	3750	2250	-
3	342640	87300	40985	46315	30835	15480	11600	5200	16800	2500	3000	-
4	607130	109633	58735	50898	31650	19248	6550	35200	41750	-	23000	-
5	529950	196880	40115	66765	66752	13	8400	15000	23400	30000	5800	-
6	254465	92065	19777	72288	31984	40304	10108	3150	13250	-	-	-
7	331145	71800	26040	45760	32044	13716	3875	20480	24355	-	5000	-
8	730120	134608	53471	81137	35846	45291	3000	86250	89250	-	28000	1200
9	743075	152375	64880	87495	36704	50791	7000	42000	49000	-	7000	-
10	716410	134300	57337	76963	26500	50463	20500	26000	46500	-	3000	-
11	467855	97300	38495	58805	24452	34353	26000	7500	33500	-	-	-

APPENDIX - 24 (Cont.)

	1	2	3	4	5	6	7	8	9	10	11	12
12	722720	150250	74470	105780	52908	52872	48750	3000	51750	20000	-	-
13	983410	134695	59783	74912	25824	49088	12350	51500	63850	4500	15000	-
14	639325	100900	41800	59783	34160	24940	18500	17800	36300	4000	12500	-
15	488340	87225	38330	48895	30387	18508	8500	7500	16000	1000	10000	-
16	612020	104875	42290	62585	25124	37461	8000	15800	24000	3750	15000	-
17	708570	103400	43535	59865	37314	22551	12500	6400	18900	-	-	250
18	545200	71340	33745	37595	22457	15138	12800	-	12800	-	-	360
19	906240	140900	84130	56770	25296	31474	30350	4800	35150	-	10000	1200
20	717900	103340	43725	59615	24672	34943	2400	14000	16400	10150	15000	1800
Total	12018280	2196321	951105	1245216	643882	601334	270275	392230	662505	79650	157550	4810
Average (28)	600914	109816	7555	62261	32194	30067	13514	19612	33126	3983	7878	241
Per-Capita (108)	111280	20336	8807	11530	5962	5568	2503	3632	6134	738	1459	45

APPENDIX - 24 *(Cont.)*

Assets, Income, Expenditure, Savings, Investment details

(Low Income - Urban)

Sl. no.	Assets	Total income	Total expenditure	Net income	Household Consumer expenditure	Savings	Financial investment	Physical investment	Total investment	Disinvestment	Borrowing	Capital transfers
1	2	3	4	5	6	7	8	9	10	11	12	13
			(2-3)		(4-5)			(7+8)				
1	45550	7800	-	7800	8945	-1145	400	150	550	-	650	-
2	15040	7620	1020	6600	6635	-35	285	525	810	-	550	-
3	35425	15000	3600	11400	9700	1700	720	1250	1970	-	600	-
4	39120	10800	1800	9000	8580	420	1850	700	1750	1200	700	50
5	36190	10020	420	9600	8987	613	1120	1400	2520	1120	400	1200
6	48610	10200	-	10200	10330	-130	775	800	1575	425	950	1700
7	36795	9000	-	9000	8450	550	675	250	925	600	3200	-
8	43485	16200	5400	10800	9755	1045	325	250	575	-	300	-
9	35385	10500	2940	7560	7490	70	225	700	925	750	2750	-
10	34420	7500	-	7500	8000	-500	395	1180	1575	-	500	-
11	11705	8400	1800	6600	5840	760	225	1400	1625	150	225	-

APPENDIX - 24 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
12	38300	8500	-	8500	8825	-325	300	1500	1800	425	500	-
13	12500	12000	1800	10200	9460	740	400	700	1100	725	2550	-
14	31275	7800	-	7800	7910	-110	690	1505	2195	850	450	-
15	38375	11400	-	11400	8860	2540	400	350	750	650	900	-
16	13320	18800	3000	7800	7615	185	200	425	625	-	200	-
17	40055	12300	1500	10800	10080	720	750	285	1035	875	200	-
18	34605	7920	-	7920	7293	627	600	1500	2100	-	2500	-
19	35475	8400	-	8400	9817	-1417	175	-	175	3500	1000	-
20	2240	6340	-	6340	5964	+376	-	150	150	575	3500	-
21	38900	6000	-	6000	5679	321	250	275	525	3250	-	-
22	16675	10560	2916	7644	5846	1798	50	750	800	-	100	-
23	28175	11000	-	11000	8120	2880	75	1075	1150	1200	2000	-
24	4875	8900	-	8900	6428	2472	150	825	975	3125	600	-
25	44140	7500	-	7500	8935	-1435	385	1550	1935	2075	2900	-
26	15000	8400	600	7800	6736	1064	65	125	190	175	900	-
27	5575	9720	-	9720	8674	1046	-	-	-	1500	1000	-
28	43675	7200	-	7200	9003	-1803	200	-	200	750	1050	-
29	4025	9000	-	9000	9170	-170	75	-	75	500	500	-
30	53895	12600	4680	7920	6573	1347	275	300	575	1500	3000	-
31	7090	10780	960	9820	9541	279	150	775	925	1500	1000	-
32	2465	4800	-	4800	5248	-448	-	-	-	-	1450	-
33	13675	14400	4200	10200	9075	1125	1320	650	1970	-	500	-
34	30575	6000	-	6000	6465	-465	500	900	1400	-	800	-
35	16545	16200	5400	10800	10615	185	800	925	1725	-	1800	-

APPENDIX - 24 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
36	4300	10500	-	10500	10725	-225	250	150	400	125	500	-
37	12075	11520	7345	4175	4341	-166	150	-	150	-	500	-
38	14590	7945	3295	4650	4952	-302	-	-	-	-	700	-
39	30290	19800	9288	10512	12550	-2038	55	-	55	-	625	-
40	11825	6400	-	6400	7512	-1112	-	-	-	-	-	-
41	5250	7200	-	7200	9886	-2686	-	-	-	-	1640	-
42	9075	5760	1290	4470	6121	-1651	-	-	-	-	1040	-
43	16635	6000	-	6000	6159	-159	-	-	-	-	1250	-
44	16820	9860	2000	7860	6202	1658	625	-	625	-	2500	-
Total	1084015	426545	65254	361291	353092	+8199	15085	22320	36530	27545	49580	1350
Average (44)	24637	9694	1483	8211	8025	+186	343	507	830	626	1127	31
Per Capita (186)	5828	2293	351	1942	1898	+44	81	120	196	148	261	7

APPENDIX - 24 (*Cont.*)

Assets, Income, Expenditure, Savings, Investment details

(Lower Middle - Rural)

Sl. no.	*Assets*	*Total income*	*Total expenditure*	*Net income*	*House-hold consu-mer expenditure*	*Savings*	*Finan-cial invest-ment*	*Physi-cal invest-ment*	*Total invest-ment*	*Dis-invest-ment*	*Borro-wing*	*Capi-tal trans-fers*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
			(2-3)		(4-5)			(7-8)				
1	163820	21600	7800	13800	15900	-2100	2025	950	2975	500	7800	-
2	173390	43500	23100	20400	18230	2170	1950	2750	4700	-	18000	-
3	135500	18500	3000	15500	19440	-3940	1975	2000	3975	-	6500	3500
4	149900	21850	3000	18850	17670	1180	2000	2850	4850	-	4800	-
5	84370	15000	-	15000	12335	+2665	2350	2250	4600	-	750	-
6	149255	19800	-	19800	15060	4740	3475	2250	5725	-	4750	3000
7	128925	17300	2900	14400	16540	-2140	2100	700	2800	-	12000	1500
8	138475	55000	39500	15500	16198	-698	1795	1500	3295	-	3150	-
9	187600	45000	25400	19600	15420	4180	4210	5500	9710	580	3500	-
10	95450	60000	44100	15900	17285	-1385	1750	1100	2850	-	6200	500
11	119625	39600	27000	12600	11645	955	1625	1200	2825	-	12500	1375

APPENDIX - 24 (*Cont.*)

1	2	3	4	5	6	7	8	9	10	11	12	13
12	95040	19200	-	19200	15570	3630	2325	3850	6175	-	5300	-
13	46985	14000	1720	12280	12735	-455	3066	750	3815	-	2800	-
14	70650	19100	-	19100	16420	2680	2250	750	3000	-	3500	-
15	19475	15000	-	15000	12441	2559	1800	600	2400	-	-	3000
16	147925	86400	66040	20360	14566	5794	4125	4425	8545	-	2800	1750
17	31140	14100	-	14100	15610	-1510	2200	48000	50200	5000	12600	5000
18	89975	270000	190500	19500	17271	2229	1000	5000	6000	-	2125	500
19	135095	84500	69350	15150	12687	2463	1510	4075	5585	-	2000	-
20	60465	29800	12300	17500	15517	1983	1165	3150	4315	850	1200	-
21	120795	22800	-	22800	17241	5559	4650	7500	12150	-	-	1500
22	150865	198600	174720	23820	18591	5229	4200	5975	10175	3750	5000	-
23	138255	228600	206400	22200	16546	5654	2700	6325	9025	1500	1400	600
24	113365	28660	9000	19660	14343	5317	2950	2860	5810	-	3000	3000
25	56350	33000	14580	18420	12106	6314	310	1650	1960	-	3000	-
26	147525	120000	100920	19080	17878	1202	1980	-	1980	-	5000	-
27	148650	21550	3750	17800	16127	1673	2775	3050	5825	-	2500	1000
28	167065	39125	15625	23500	19141	4359	4700	4250	8950	-	5500	-
29	137445	270365	252000	18365	16718	1647	3800	5575	9375	7500	28500	-
30	145625	65300	45680	19620	17751	1869	2075	4350	6425	-	4250	825
31	22395	21200	6216	14984	12452	2532	360	1250	1610	-	-	-
32	137240	18000	-	18000	15940	2060	2100	2750	4850	-	18000	-
33	179620	19800	-	19800	19205	595	3620	2000	5620	-	500	33000
34	9500	12198	-	12198	13440	-1242	150	650	800	-	2500	500
35	248650	169200	149400	19800	17865	1935	3425	5750	9175	-	5250	-

APPENDIX - 24 *(Cont.)*

Assets, Income, Expenditure, Savings, Investment details

(Low Middle - Urban)

Sl. no.	*Assets*	*Total income*	*Total expenditure*	*Net income*	*House-hold consu-mer expenditure*	*Savings*	*Finan-cial invest-ment*	*Physi-cal invest-ment*	*Total invest-ment*	*Dis-invest-ment*	*Borro-wing*	*Capi-tal trans-fers*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1	47335	37200	22800	14400	9775	4625	850	1155	2005	-	1500	-
2	33450	15000	-	15000	12565	2435	950	-	950	-	2000	-
3	82590	50500	29500	21000	19630	1370	2375	2500	4875	-	2500	-
4	220930	21600	-	21600	19940	1660	3825	3000	6825	1850	7000	-
5	143825	30000	12000	18000	15545	2455	1475	1850	3325	-	4500	-
6	73295	12000	-	12000	12985	-985	1500	600	2100	-	700	-
7	52450	22680	-	22680	21570	1110	2000	7000	9000	-	4750	-
8	8545	12000	-	12000	12830	-830	600	1100	1700	-	1750	-
9	115960	22800	-	22800	18950	3850	2350	3300	5650	-	2200	-
10	74725	75600	54600	21000	12049	8951	1150	11000	12150	-	3000	-
11	201925	19900	2500	17400	19479	-2079	2950	1250	4200	-	-	-
12	47800	25200	10800	14400	11328	3072	275	2500	2775	-	2360	-

APPENDIX - 24 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
12	45400	18000	-	18000	11405	6595	2975	-	2975	-	2420	-
13	43900	123180	99750	23430	14149	9281	350	5250	5600	-	16500	-
14	47575	14125	2000	12125	9570	2555	1330	-	1330	-	2250	-
15	122775	21800	-	21800	16652	5148	3900	3200	7100	-	-	5000
16	93450	27900	9000	18900	12534	6366	1250	-	1250	-	4500	-
17	26100	18000	-	18000	16074	1926	2465	-	2465	-	2000	-
18	79700	22200	-	22200	19130	3070	3250	3000	6250	-	1250	-
19	133410	21600	-	21600	16811	4789	1390	17000	18390	-	-	3000
20	111575	90020	71750	18270	14779	3491	1815	1500	3315	6500	2150	-
21	330178	82675	60880	21795	17687	4108	1650	8250	9900	-	12000	-
22	94010	131875	107800	24075	15036	9039	2850	2750	5600	-	5000	-
23	77550	138000	115500	22500	21251	1249	2450	-	2450	-	1250	-
24	13100	25200	12696	12504	11469	1035	500	500	1000	-	1250	-
25	124275	17500	1800	15700	13198	2502	2850	-	2850	-	-	-
Total	6692103	3214203	2107437	1106766	950275	156491	133815	224290	358105	27950	279405	115750
Ave-rage	109707	52692	34548	18144	15578	2565	2194	3677	5871	458	4580	254
Per Capita	24072	11562	7581	3981	3418	563	481	278	807	101	1005	62

APPENDIX - 24 *(Cont.)*

Assets, Income, Expenditure, Savings, Investment details

(Upper Middle - Urban)

Sl. no.	*Assets*	*Total income*	*Total expenditure*	*Net income*	*House-hold consu-mer expenditure*	*Savings*	*Finan-cial invest-ment*	*Physi-cal invest-ment*	*Total invest-ment*	*Dis-invest-ment*	*Borro-wing*	*Capi-tal trans-fers*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1.	219320	38600	14400	24200	22700	1500	3425	2300	5725	-	11500	5000
2.	241620	350400	324000	26400	21750	4650	3350	1500	4850	450	6200	-
3.	163250	175200	150600	24600	19930	4670	1500	6500	8000	-	2500	4000
4.	204640	40800	16560	24240	25710	-1470	3750	2550	6300	-	3800	5000
5.	137975	208000	173080	34920	23580	11340	7650	7500	15150	-	300	-
6.	163000	27000	-	27000	27730	730	4100	20000	24100	-	5000	-
7.	182615	42300	15900	26400	20096	6304	2835	7650	10485	2750	2400	-
8.	136140	31200	-	31200	15016	16184	2995	6025	9020	-	2000	-
9.	104035	264000	236160	27840	20980	6860	5475	5500	10975	5500	4000	-
10.	95560	27000	-	27000	19276	7724	4625	3250	7875	-	3800	3500
11.	146075	97600	68410	29190	22128	7062	5800	5500	11300	-	4000	-
12.	133075	169800	136250	33550	19979	13571	3950	31250	35200	-	2450	-
13.	201275	152875	118260	34615	15035	19580	3415	7250	10665	4250	9500	-

APPENDIX - 24 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
14.	198870	36000	12000	24000	19565	4435	7850	20000	27850	6000	12000	-
15.	425920	48250	16000	32250	26840	5410	1400	650	2050	-	3200	-
16.	240025	32700	-	32700	24190	8510	3500	10000	13500	25000	175000	-
17.	280550	118000	88200	29800	22330	7470	4200	15000	19200	10000	14000	-
18.	83650	28500	-	28500	19945	8555	30000	975	30975	-	-	-
19.	319550	38100	12000	26100	19740	6360	3250	3500	6750	-	16500	-
20.	178000	30000	-	30000	20680	9320	4250	8000	12250	-	7500	-
21.	232150	33400	-	33400	26240	7160	7160	7000	14160	-	15000	-
22.	211550	30000	-	30000	25660	4340	4700	6750	11450	-	2000	-
23.	310675	32000	2000	30000	21960	8040	2925	6650	9575	3400	21500	-
24.	101950	25125	-	25125	22240	2885	3700	6700	10400	-	2000	3000
25.	279550	40950	14050	26900	19841	7059	2165	6000	8165	-	5000	-
26.	150380	26600	-	26600	19760	6840	3575	5000	8575	-	-	3000
27.	131150	25200	-	25200	13255	11945	2005	40000	42005	-	20150	-
28.	208115	38625	3000	35625	19649	15976	3725	14150	17875	5000	-	-
29.	64950	32400	5700	26700	23273	3427	475	-	475	-	-	-
30.	134350	32375	7650	24725	17185	7540	3425	6250	9675	-	4500	-
31.	78030	32400	-	32400	18258	14142	3450	6300	9750	-	-	-
Total	5757995	2305400	1414220	891180	654511	236669	144625	269700	414325	62350	355800	29500
Average (31)	185741	74367	45620	28748	21113	7635	4668	8700	13365	2011	11477	952
Per-Capita (155.5)	37029	14825	9094	5731	4209	1522	930	1734	2664	401	2289	190

APPENDIX - 24 *(Cont.)*

Assets, Income, Expenditure, Savings, Investment details

(High Income - Urban)

Sl. no.	Assets	Total income	Total expenditure	Net income	Household consumer expenditure	Savings	Financial investment	Physical investment	Total investment	Disinvestment	Borrowing	Capital transfers
1	2	3	4	5	6	7	8	9	10	11	12	13
						(4-5)			(7+8)			
1	210375	63665	22315	41250	23660	17590	5200	7700	12900	-	-	1200
2	420970	108000	43115	64885	24962	39923	5750	5950	11700	25000	-	33000
3	351600	57500	-	57500	26040	31460	6900	22500	29400	10000	-	5000
4	318890	181675	130000	51675	26280	25395	6325	22800	29125	-	-	47000
5	118875	42000	-	42000	31410	10590	6875	10000	16875	-	-	3750
6	147200	36000	-	36000	43640	-27640	3300	10000	13300	-	10000	4400
7	313925	66600	18600	48000	27345	20665	12025	7000	19525	-	-	2675
8	510445	81750	32750	49000	29715	19285	5275	24000	29275	1750	-	19000
9	853950	40200	-	40200	34710	5490	5075	17000	22075	-	-	11500
10	105220	62440	-	62640	30390	32250	19950	8000	27950	-	-	3000
11	405675	54000	11400	42600	29050	13550	10150	5650	15800	-	-	30000

APPENDIX - 24 *(Cont.)*

1	2	3	4	5	6	7	8	9	10	11	12	13
12	445200	61800	19800	42000	28820	13189	7050	10000	17050	-	-	4400
13	170290	68550	28800	39750	20361	19389	8900	3200	12100	-	-	-
14	87425	47600		47600	24074	23526	18000	4600	22600	-	3000	1500
Total	3960040	971680	306780	665100	400447	264653	109375	165400	274775	36750	25000	166425
Ave-rage (14)	202860	69406	21913	47508	28603	18905	7814	11814	19627	2625	1786	11887
Per Capita (78)	50770	12457	3933	8527	5134	3392	1402	2121	8523	471	321	2134

APPENDIX - 25

Financial Investment of Rural Households

(Average - Percentage)

Category	Cash in hand	Deposit in bank	Post office saving	Coopera-tive bank	Chit fund	Provi-dent fund	Insu-rance premium	Total
1. Low Income	69	94	105	24	209	55	-	566
	(12.41)	(16.91)	(18.88)	(4.32)	(37.59)	(9.89)		(100)
2. Lower Middle Income	434	1167	206	178	255	521	28	2789
	(15.56)	(41.84)	(7.39)	(6.38)	(9.14)	(18.68)	(1.01)	(100)
3. Upper Middle Income	1498	2779	79	-	514	319	-	5189
	(28.87)	(53.56)	(1.52)		(9.90)	(6.15)		(100)
4. High Income	1673	7159	2431	-	2151	100	-	13514
	(12.38)	(52.97)	(17.99)		(15.92)	(0.74)		(100)
5. Overall	681	1924	447	72	541	278	10	3953
	(17.23)	(48.67)	(11.31)	(1.82)	(13.69)	(7.03)	(0.25)	(100)

(Figures in the parenthesis denote percentages)

APPENDIX - 26

Financial Investment of Urban households

(Average - Percentage)

Category	*Cash in hand*	*Deposit in bank*	*Post office saving*	*Coopera-tive bank*	*Chit fund*	*Provi-dent fund*	*Insu-rance premium*	*Others*	*Total*
Low	110	53	67	20	87	6	-	-	343
	(32.07)	(15.45)	(19.53)	(5.83)	(25.37)	(1.75)	-	-	(100)
Lower	·392	644	108	196	390	235	299	-	2194
Middle	(17.87)	(29.35)	(4.92)	(8.93)	(17.78)	(10.71)	(10.44)	-	(100)
Upper	1132	1077	117	241	341	463	286	1011	4668
Middle	(24.25)	(23.07)	(2.51)	(5.16)	(7.30)	(9.92)	(6.13)	(21.66)	(100)
High	1218	2736	718	54	1713	721	573	81	7814
	(15.59)	(35.02)	(9.19)	(0.69)	(21.92)	(9.23)	(7.33)	(1.03)	(100)
Overall	539	755	155	140	415	260	205	217	2686
	(20.07)	(28.11)	(5.77)	(5.21)	(15.45)	(9.68)	(7.63)	(8.08)	(100)

(Figures in the parenthesis denote percentages)

APPENDIX - 27

Financial Investment : Totals, Average & Per Capita

	Low Income Group		Lower Middle Income Group		Upper Middle Income Group		High Income Group	
	Rural	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*
Total investment	26720	15085	150605	133818	145295	144725	270325	109575
Average investment	556	343	2789	2194	5189	4668	13514	7814
Per capita investment	115	81	599	481	925	930	2503	1402

APPENDIX - 28

Physical Investment of Rural households

(Average - Percentage)

Income Group	*Number of Households*	*Purchase of land*	*Purchase of livestock*	*Purchase of implements*	*Construction of house*	*Gold and silver*	*Total*
Low	48	-	598 (36.29)	667 (40.47)	116 (7.04)	267 (16.20)	1648 (100.0)
Lower Middle	54	578 (20.08)	580 (20.15)	390 (13.56)	343 (11.92)	987 (34.29)	2878 (100.0)
Upper Middle	28	-	675 (15.97)	1950 (46.13)	375 (8.87)	1227 (29.03)	4227 (100.0)
High	20	1900 (9.69)	1788 (9.12)	6572 (33.51)	5258 (26.81)	4094 (20.87)	19612 (100.0)
Overall	150	461 (9.28)	765 (15.40)	1594 (32.09)	932 (18.75)	1216 (24.48)	4968 (100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 29

Physical Investment of the Urban households

(Average - Percentage)

Income Group	*Purchase of building*	*Purchase of land*	*Purchase of livestock*	*Purchase of business equp.*	*Purchase of vehicles*	*Construction of house, cattleshed*	*Purchase of gold & silver*	*Others*	*Total*
Low	-	-	20 (3.94)	149 (29.39)	31 (6.11)	168 (33.14)	122 (24.06)	17 (3.35)	507 (100.0)
Lower Middle	197 (5.36)	250 (6.80)	27 (0.73)	919 (25.00)	392 (10.66)	1484 (40.36)	402 (10.93)	6 (0.16)	3677 (100.0)
Upper Middle	565 (6.49)	1129 (12.98)	53 (0.61)	598 (6.87)	746 (8.57)	4311 (49.55)	1280 (14.72)	18 (0.21)	8700 (100.0)
High	-	1786 (15.12)	179 (1.52)	1964 (16.62)	1989 (16.84)	2518 (21.31)	2878 (24.36)	500 (4.23)	11814 (100.0)
Total	197 (4.33)	502 (11.04)	45 (1.00)	724 (15.93)	509 (11.16)	1780 (39.16)	732 (16.10)	58 (1.28)	4546 (100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 30

Physical Investment (i): Total, average & per capita

	Low Income Group		*Lower Middle Income Group*		*Upper Middle Income Group*		*High Income Group*		*Total*	
	Rural	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*
Total Physical Investment	79120	22320	155425	224290	118350	269700	392230	165400	745125	681710
Average Physical Investment	1648	507	2878	3677	4227	8700	19612	11814	4968	4546
Per capita Physical Investment	340	120	618	807	754	1734	3632	2121	994	977

APPENDIX - 31

Sources of borrowing among the Rural households

(Average - Percentage)

Income Group	*Commercial bank*	*Co-operative bank*	*Prof. money lender*	*Village money lender*	*Others*	*Total*
Low	907 (46.11)	786 (39.76)	81 (4.12)	187 (9.51)	6 (0.30)	1967 (100.0)
Lower Middle	1018 (57.16)	707 (39.70)	-	56 (3.14)	-	1781 (100.0)
Upper Middle	7988 (82.30)	1718 (17.70)	-	-	-	9706 (100.0)
High	4638 (58.87)	3240 (41.13)	-	-	-	7878 (100.0)
Overall	2766 (66.92)	1259 (30.46)	26 (0.63)	80 (1.94)	2 (0.05)	4133 (100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 32

Sources of borrowing among the Urban households

(Average - Percentage)

Income Group	*Commercial bank*	*Co-operative bank*	*Prof. money lenders*	*Others*	*Total*
Low	631 (56.69)	165 (14.83)	302 (27.13)	15 (1.35)	1113 (100.0)
Lower Middle	3218 (70.26)	1026 (22.40)	266 (5.81)	70 (1.53)	4580 (100.0)
Upper Middle	11239 (89.21)	448 (3.90)	500 (4.36)	290 (2.53)	11477 (100.0)
High	8191 (68.90)	2625 (22.00)	-	1071 (9.02)	11887 (100.0)
Overall	4375 (77.15)	804 (14.18)	300 (5.29)	192 (3.38)	5671 (100.0)

(Figures in the parenthesis denote percentages)

APPENDIX - 33

Comparative Indices for Tamil Nadu as well as All India for 1986 and 1987[97]

Year	1986		1987	
	Tamil Nadu	*All India*	*Tamil Nadu*	*All India*
1	*2*	*3*	*4*	*5*
January	358.7	357.5	398.1	377.7
February	363.4	358.9	399.3	376.6
March	364.8	359.8	399.2	378.1
April	367.6	363.3	402.1	381.2
May	376.6	368.6	408.7	390.3
June	384.1	373.1	418.6	394.0
July	387.1	378.3	423.7	400.6
August	392.0	381.6	431.4	409.6
September	393.3	383.5	432.3	407.3
October 9 month average	376.4	369.2	412.6	390.6

APPENDIX - 34

Rural Price Index Numbers for Guduvancheri[98]

[(Base: Year 1936 = 100) for the period 1963 to 1976]

Year	*Rural Price Index Number*
1963	589
1964	636
1965	736
1966	811
1967	873
1968	866
1969	894
1970	1008
1971	1056
1972	1090
1973	1288
1974	1954
1975	2211
1976	1598

APPENDIX - 35

Consumer Price Index Numbers for Industrial Workers in Madras City applicable for Chengalpattu-MGR District[99]

(Base : 1960-100)

Year/Month	*Index*
1970	169
1971	178
1972	197
1973	221
1974	281
1975	325
1976	283
1977	306
1978	316
1979	341
1980	377
1981	435
1982	462
1983	537
1984	568
1985	615
1986	668
1987	735
1988	808
1989	860
1990	924
1991	1051

APPENDIX - 36

Annual Peak Marketing Weighted Wholesale average prices* of certain commodities in the district[100]

Year	*Paddy common*	*Rice common*	*Cumbu*	*Ragi*	*Gingelly*	*Chillies*	*Coconut (100 Nos.)*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1960-61	34.67	52.00	34.00	35.55	90.00	N.A.	12.00
1961-62	36.63	N.C.	35.48	36.92	92.80	N.A.	13.00
1962-63	33.50	50.25	32.97	34.65	92.53	N.A.	N.A.
1963-64	36.00	N.A.	32.50	35.91	112.30	N.A.	N.A.
1964-65	39.10	N.A.	35.63	48.20	112.30	N.A.	N.A.
1965-66	42.68	N.A.	32.50	51.50	169.32	N.A.	N.A.
1966-67	45.00	N.A.	50.00	50.00	194.62	398.69	25.94
1967-68	45.00	71.66	N.T.	50.00	200.73	230.30	26.78
1968-69	45.00	73.66	73.00	70.00	178.77	350.00	45.00
1969-70	62.00	87.50	N.T.	65.00	240.00	400.00	65.00
1970-71	59.11	N.A.	56.50	58.36	193.88	436.26	50.00
1971-72	60.82	N.A.	61.37	60.28	201.20	346.50	34.63
1972-73	75.31	N.A.	65.40	70.90	272.90	387.50	65.00
1973-74	93.53	N.A.	104.53	98.23	365.57	550.00	105.00
1974-75	141.37	N.A.	154.25	145.57	376.04	N.A.	75.67
1975-76	93.44	N.A.	88.13	70.58	310.00	N.A.	60.00
1976-77	N.C.	141.65	90.00	80.00	337.74	N.A.	70.00
1977-78	N.C.	130.98	96.60	85.29	368.00	N.A.	78.57
1978-79	N.C.	149.29	76.62	82.40	306.67	N.A.	81.43
1979-80	N.C.	173.18	91.07	103.26	386.78	489.47	101.75
1980-81	N.C.	210.79	105.56	137.64	484.79	485.52	114.58
1981-82	N.C.	218.32	125.07	139.27	561.46	847.37	121.07
1982-83	N.C.	213.80	100.59	144.02	564.72	576.62	143.47
1983-84	N.C.	238.38	125.50	170.54	606.88	510.33	148.38
1984-85	N.C.	252.88	130.00	163.15	566.67	1016.00	125.00
1985-86	N.C.	255.60	150.00	161.97	578.85	637.16	123.00
1986-87	N.C.	316.03	158.75	176.81	715.79	563.17	194.00
1987-88	209.16	N.A.	N.A.	204.40	851.79	826.31	N.A.
1988-89	239.88	N.A.	176.67	214.44	723.86	1574.20	209.41
1989-90	207.31	N.A.	155.78	182.29	861.91	1102.59	192.51

N.C. = Not Computed

N.A. = Not Available

N.T. = No Transaction

* Prices are in Rupees per quintal except coconut

APPENDIX - 37

Annual Average Retail Prices of important commodities in the district[101]

(Prices are in Rupees per Kg.)

Year	COMMODITIES						
	Rice I	Rice II	Cholam	Cumbu	Ragi	Horse Gram	Salt
1	2	3	4	5	6	7	8
1960-61	N.T.	0.63	N.T.	N.T.	0.42	0.38	0.04
1961-62	N.T.	0.67	N.T.	N.T.	0.42	0.41	0.06
1962-63	N.T.	0.64	N.T.	N.T.	0.41	0.44	0.06
1963-64	N.T.	0.62	N.T.	N.T.	0.37	0.41	0.06
1964-65	N.T.	0.68	N.T.	N.T.	0.47	0.53	0.06
1965-66	0.76	0.68	N.T.	N.T.	0.50	0.63	0.06
1966-67	0.90	0.74	N.T.	N.T.	0.74	0.91	0.09
1967-68	0.90	0.77	N.T.	N.T.	0.64	0.75	0.09
1968-69	1.13	1.04	N.T.	N.T.	0.73	0.77	0.09
1969-70	1.13	1.03	N.T.	N.T.	0.76	0.75	0.09
1970-71	1.02	0.91	N.T.	N.T.	0.70	0.71	0.09
1971-72	1.27	1.11	N.T.	N.T.	0.73	0.76	0.09
1972-73	1.33	1.15	N.T.	N.T.	0.72	0.74	0.09
1973-74	11.61	1.43	N.T.	N.T.	0.90	0.80	0.09
1974-75	3.03	2.88	1.41	1.90	1.81	1.42	0.18
1975-76	2.12	1.91	N.T.	1.29	1.30	1.29	0.19
1976-77	1.80	1.51	N.T.	1.26	1.11	1.41	0.18
1977-78	1.84	1.07	N.T.	1.27	1.19	1.45	0.20
1978-79	1.80	1.66	1.15	1.04	1.03	1.32	0.26
1979-80	2.08	2.03	1.25	1.25	1.23	1.40	0.28
1980-81	2.50	2.33	N.T.	1.47	1.64	1.96	0.31
1981-82	2.87	2.62	N.T.	1.50	1.75	2.12	0.32
1982-83	3.41	3.12	1.68	1.62	1.76	2.35	0.35
1983-84	3.56	3.28	1.87	1.67	2.06	2.32	0.43
1984-85	3.12	2.84	1.87	1.74	1.98	2.25	0.48
1985-86	3.37	3.17	2.04	2.10	2.00	2.65	0.53
1986-87	3.67	3.40	2.04	2.02	2.18	2.69	0.53
1987-88	4.16	3.84	N.T.	2.18	2.40	2.59	0.49
1988-89	4.54	4.23	N.T.	2.33	2.62	2.82	0.52
1989-90	4.78	4.52	N.T.	2.50	2.71	N.T.	0.58

N.T. = No Transaction

APPENDIX - 38

Consumer Price (Composite) Index Numbers for Rural Tamil Nadu

(1970-71 = 100)[102]

Sl. no.	Period	Food	Fuel & lighting	Clothing	Others	Composite Index
1	*2*	*3*	*4*	*5*	*6*	*7*
1.	1980	215.42	268.22	213.67	220.32	219.20
2.	1981	260.85	296.49	229.04	243.56	260.09
3.	1982	261.25	314.40	240.52	264.97	263.95
4.	1983	315.50	342.97	255.22	289.27	311.79
5.	1984	322.34	368.70	261.17	324.72	322.31
6.	1985	331.21	402.88	284.72	351.34	355.07
7.	1986	365.46	430.60	302.65	363.98	366.26
8.	1987	400.95	448.89	326.43	396.53	399.75
9.	1988	427.97	500.12	368.18	448.67	431.19
10.	1989	476.83	503.55	441.07	552.04	480.33
11.	1990	491.28	520.25	514.92	537.36	498.19
12.	1991	568.57	566.56	597.97	593.64	572.04

APPENDIX - 39

Small Savings Collection in the district from 1972-73 to 1990-91[103]

(Rupees in Crores)

Year	*Gross*	*Net*
1972-73	2.29	0.54
1973-74	2.38	0.53
1974-75	4.26	0.67
1975-76	4.14	0.72
1976-77	4.73	0.83
1977-78	5.26	0.58
1978-79	6.84	1.34
1979-80	7.64	1.80
1980-81	8.83	2.22
1981-82	9.71	2.16
1982-83	11.43	3.36
1983-84	15.88	4.88
1984-85	22.45	9.22
1985-86	24.89	9.57
1986-87	27.98	8.08
1987-88	28.43	7.09
1988-89	33.21	8.55
1989-90	47.88	21.73
1990-91	89.84	20.14

APPENDIX - 40[104]

Sl. no.	Class of employees	Minimum rates of wages per day from 5 April 1983 Rs.	Minimum rates of wages per day from 3 April 89 Rs.
1.	Employees engaged in ploughing the bullocks and ploughs supplied by him	18.00	32.00
2.	Employees engaged in ploughing with bullocks and ploughs not supplied by him	11.00	16.00
3.	Employees engaged in harvest of paddy (reaping, carrying to threshing floor, thrashing.......... measuring and bagging)	11.00 or cash value of the workers share in 1/8th of the gross yield of produce whichever is higher.	16.00
4.	Employees engaged in harvest of crops other than paddy.	11.00	16.00
5.	Employees engaged in (i) Sowing (ii) Plucking of Seeding and replanting of Seedling (iii) Weeding	8.00	(i) 16.00 (ii) 15.00 (iii) 14.00
6.	Employees engaged in other agricultural operations including trimming blund and fields, bee-keeping, poultry farming, dairy-farming and climbing trees)	10.00	16.00
7.	Attached labourer/resident labourer	210.00 (per month)	375.00 (per month)

Explanation :

1) Every minimum rate of wage specified is all-inclusive rate allowing for the basic rate, cost of living allowance and the cash value of concession, if any, but it does not include the cost of food, if any, supplied to the employees and hence the cost of food should not be deducted from the minimum rates of wages paid to the employees.

2) Where the same work or work of a similar rates is performed, no distinction in the payment of wages should be made as between men and women workers.

Wages paid wholly or partly in kind :

In some parts of the State of Tamil Nadu, wages are paid wholly or partly in kind for certain classes of employment in agriculture. For those employees, the minimum rates of wages shall not be less than the minimum rates of wages that have been fixed by the government.

Working Hours :

The number of working hours for employment in agriculture shall constitute a normal working day, exclusive of the time taken for meals, rest and other purposes.

Employees engaged in agricultural operations except those engaged in ploughing have 7 hours of work per day and employees engaged in ploughing have 5 hours of work per day.

APPENDIX - 41

Minimum wages fixed by the government to workers engaged in different occupations from time to time between 1985 and 1990 are as follows[105]:

Sl.no.	*Month and year*		*Adults*	*Adolescents*
1.	May	1985	9.89	6.18
2.	September	1985	11.33	7.51
3.	January	1986	11.58	7.67
4.	May	1986	11.88	7.86
5.	September	1986	12.09	7.99
6.	January	1987	12.38	8.17
7.	May	1987	12.64	8.33
8.	January	1988	13.28	8.73
9.	May	1988	13.74	9.02
10.	September	1988	14.15	9.28
11.	January	1989	14.52	9.51
12.	May	1989	14.88	9.73
13.	September	1989	14.97	9.79
14.	January	1990	15.45	10.09

APPENDIX - 42

Employment

There are two District Employment Offices in this District, one at Kancheepuram and the other at Thiruvallur. The District Employment Office, Thiruvallur is a composite office formed by merging the two Sub-Employment Offices at Ambattur and Thiruvallur and it is functioning from 4 August 1986. The District Employment Office, Kancheepuram was formerly functioning in Madras and was shifted to Kancheepuram on 13 October 1982[106].

Unemployed persons as per the Live Register and Placement from 1967 to 1986 :

Year	*Live Register*	*Placement*
1967	24151	2984
1968	31595	2599
1969	29605	2712
1970	27469	3094
1971	31136	2836
1972	44039	2765
1973	47895	2732
1974	48858	2476
1975	50406	1584
1976	67240	2630
1977	75034	1787
1978	87684	1903
1979	94524	2235
1980	89786	2916
1981	100926	3242
1982	116112	3391
1983	124818	4328
1984	135655	3468
1985	159903	2945
1986	185609	2187

APPENDIX - 43

Classification of Workers in the district

(As per 1991 Census) Provisional[107]

Sl. no.	Classification	Total	Rural	Urban
1	2	3	4	5
I.	Cultivators	334974	322288	12686
II.	Agricultural Labourers	241254	232559	8695
III.	Mining and Quarrying	28294	22450	5844
IV.	Household Industry	81745	49368	32377
V.	Manufacturing other than Household Industry	58492	32134	26358
VI.	Construction	11781	7170	4611
VII.	Trade and Commerce	36972	19343	17629
VIII.	Transport storage and communication	17234	8099	9135
IX.	Other services	142429	101165	41264
	Total workers	953175	794576	158599

APPENDIX - 44

Distribution of workers in the district

(As per 1978 Census)[108]

Sl. no.	*Classification*	*Total*	*Rural*	*Urban*
1	*2*	*3*	*4*	*5*
I.	Cultivators	238790	223449	15341
II.	Agricultural Labourers	330154	302314	27840
III.	Live Stock Forestry, Fishing, Hunting and Plantation Orchards and activities	19389	14791	4598
IV.	Mining and Quarrying	2183	1930	253
V.	(a) Manufacturing Processing, Servicing and repairs			
	(a) Household Industry	50230	29779	20451
	(b) Manufacturing, Processing, Servicing and repairs			
	(b) Other than Household Industry.	112703	30129	82574
VI.	Construction	16422	6617	9805
VII.	Trade and Commerce	64624	20830	43794
VIII.	Transport, Storage and Communication	41302	9309	31993
IX.	Other Services	104669	45385	59284
	Total Workers	980466	684533	295933

APPENDIX - 45

Classification of workers in the district

(As per 1981 Census)[109]

Sl. no.	*Classification*	*Total*	*Rural*	*Urban*
1	*2*	*3*	*4*	*5*
I.	Cultivators	288115	270659	17456
II.	Agricultural Labourers	416797	379282	37515
III.	Household Industry Manufacturing, Processing, Servicing and Repairs [(V (a))]	68444	37040	31404
IV.	Other Workers	503361	173380	329981
V.	Total Workers	1276717	860361	416356

APPENDIX - 46

Employment in different occupations as on 30 September 1989[110]

		Total	*Percentage*
1.	Professional and Technical Workers	5468	2.31
2.	Clerical and Related Workers	6282	2.65
3.	Sales Workers * to total	640	0.30
4.	Skilled Workers	5619	2.38
5.	Production and Related Workers	18612	7.80
6.	Unskilled office workers like Office Assistant, Record Clerk, etc.	457	0.20
7.	Unskilled Workers (Others) Dhobi, Barbers, Sweeper, etc.)	6084	2.57
8.	Fresh Workers	193837	81.79
	Total	236999	99.95% or 100

APPENDIX - 47

Employment status from 1967 to 1988

Year	Agriculture and allied sector	State Govt. Departments	Central Govt. Departments	Public Sector Undertakings	Women in the Organised sector
1	2	3	4	5	6
1967	..	16924	19601	6993	6557
1968	..	16510	15664	8653	6173
1969	..	16493	15690	8771	6290
1970	591	16650	17401	9580	11307
1971	618	17310	18241	10546	10065
1972	607	16785	18508	12533	12878
1973	618	13898	18120	12649	11092
1974	675	21816	17787	13742	12356
1975	634	22769	17880	14148	12671
1976	751	22013	18276	15061	12727
1977	738	22630	20745	10688	13156
1978	1004	24303	22055	22582	14258
1979	1024	24324	22211	8788	Not Available
1980	732	24991	22068	23637	Not Available
1981	1085	23792	22493	21865	12857
1982	999	29398	22478	23843	15115
1983	986	39142	22553	25693	14347
1984	1188	42728	22213	23372	19713
1985	1117	39117	22970	25629	22231
1986	1267	36632	22556	26074	23813
1987	..	38167	22276	31847	27260
1988	..	53771	25604	33255	34823

APPENDIX - 48

Employment in Industries and Other Sectors for the period 1970 - 86

Sl. no.	*Industries and Other Sectors*	*1970*	*1971*	*1972*	*1973*	*1974*
1.	Mining and Quarrying	247	225	203	227	227
2&3.	Manufacturing	65508	69732	70339	73890	75192
4.	Electricity & Water	1379	1339	1365	1305	1282
5.	Construction	4450	4524	4533	4496	4496
6.	Wholesale, retail trade and Restaurants and Hotels	1244	1681	1714	2086	2133
7.	Transport, Storage and Communication	3706	6051	4355	3227	4226
8.	Financing, Insurance, Real Estate and Business Services	36933	38340	38128	44503	45461
9.	Community, Social and Personal Services	..	..	..	..	..

APPENDIX - 48 *(Cont.)*

1970 to 1986[111]

1976	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*
239	279	189	189	234	265	265	265	265	265	265
73073	86284	79492	89172	90115	83180	87021	89520	90898	97561	9780
5154	5217	8283	8285	9243	7756	7739	7743	6886	6909	685
1215	1190	1550	1557	1663	1857	1666	1586	1452	1606	11
1179	1209	1452	1422	1012	1743	1877	2202	2391	2352	2387
3896	1564	4503	4557	2513	4632	4885	5605	6964	5084	52
2087	2245	2444	2479	8415	8417	2910	3999	4573	4128	430
47538	48693	51480	57620	62314	50315	47685	58395	72531	64683	64

APPENDIX - 48 *(Cont.)*

Number of persons on the Live Register of Employment Exchange in Chengalpattu-MGR District (from 1975 to 1989)[112]

Year	*Number of persons*
1975	59,620
1976	67,240
1977	75,054
1978	87,684
1979	94,524
1980	89,786
1981	1,00,926
1982	1,16,112
1983	1,24,818
1984	1,35,655
1985	1,61,922
1986	1,85,609
1987	1,94,319
1988	2,09,973
1989	2,44,373

Select Development Indicators of Chengalpattu-MGR District and Tamil Nadu - A Comparision[113].

			Chengalpattu - MGR	*Tamil Nadu*
1.	Per Capita Foodgrains Production (Kgs.) (1990-91)	...	178	136
2.	Percentage of net area irrigated to net area (1989-90)	...	77.2	44.1
3.	Percentage of gross area sown to arable area (1989-90)	...	70.1	83.1
4.	Fertiliser Consumption per hectare (Kgs.) (1990-91)	...	212	122
5.	Net value added per factory (Rs.lakhs) (1987-88)	...	39.01	21.16
6.	Net Value added per employee (Rs.lakhs) (1987-88)	...	0.51	0.33
7.	Number of employees per factory (1987-88)	...	77	64
8.	Number of small scale industries per lakhs of population March 1991	...	274	229
9.	Employment in the Organised sector per lakh of population March 1991.	...	4,612	4,115
10.	Length of surfaced Government roads per Square K.M. (Km.) March 1991	...	0.43	0.38
11.	Number of Motor Vehicles per lakh of Population 1990-91	...	1,299	2,767
12.	Per Capita Bank Advances June 1991	...	1,024	2,409
13.	Percentage of Urban Population to total Population Census 1991	...	44.83	34.20
14.	Literacy rate - Males - Census 1991	...	66.66	64.02
15.	Literacy rate - Females - Census 1991	...	47.82	44.92
16.	Number of Hospital beds per lakh of Population 1988-89	...	65	79
17.	Percentage of Problem-Free Villages to total inhabited	...	91	85

Index of Select Development Indicators of Chengalpattu-MGR District and Tamil Nadu - A Comparision[114].

			Chengalpattu - MGR	*Tamil Nadu*
1.	Per Capita Foodgrains Production (Kgs.) (1990-91)	...	131	100
2.	Percentage of net area irrigated to net area sown (1989-90)	...	175	100
3.	Percentage of gross area sown to arable area (1989-90)	...	84	100
4.	Fertiliser Consumption per hectare (Kgs.) (1990-91)	...	174	100
5.	Net value added per factory (Rs.lakhs) (1987-88)	...	184	100
6.	Net Value added per employee (Rs.lakhs) (1987-88)	...	155	100
7.	Number of employees per factory (1987-88)	...	120	100
8.	Number of small scale industries per lakhs of population March 1991	...	120	100
9.	Employment in the Organised sector per lakh of population March 1991.	...	112	100
10.	Length of surfaced Government roads per Square K.M. (Km.) March 1991	...	113	100
11.	Number of Motor Vehicles per lakh of Population 1990-91	...	47	100
12.	Per Capita Bank Advances June 1991	...	43	100
13.	Percentage of Urban Population to total Population Census 1991	...	131	100
14.	Literacy rate - Males - Census 1991	...	104	100
15.	Literacy rate - Females - Census 1991	...	106	100
16.	Number of Hospital beds per lakh of Population 1988-89	...	82	100
17.	Percentage of Problem-Free Villages to total inhabited viliages (with regard to rural water supply) (1989-90)	...	107	100

APPENDIX - 49

Schemes implemented in Minjur block - 1982 - 83

Sl. no.	Name of the Scheme	TOTAL OUTLAY				No. of benefi-ciaries	EXPENDITURE UPTO THE MONTH			
		Subsidy	Margin Money	Bank Loan	Total		Subsidy	Margin Money	Bank Loan	No. of benefi-ciaries
1.	Goat Rearing	29867	29900	59833	1,19,600	92	24,240	18,850	31010	57
2.	Work Bullocks	44000	25500	32500	1,02,000	51	43,466	34,500	58034	68
3.	Sheep Unit	92400	70125	117975	2,80,500	66	87,628	65,875	109997	62
4.	Bullock Carts	25000	18750	31250	75,000	15	9,446	17,500	33054	12
	Total	1,91,267	1,44,275	2,41,558	5,77,100	224	1,64,780	1,36,725	2,32095	199

APPENDIX - 49 *(Cont.)*

Cluster Development Programme in Minjur block - 1982-83

Sl. no.	*Name of the Centre*	*No. of Persons*	*Total Outlay*	*Training*	*Infra-structure*	*Manage-rial*	*Margin Money*	*Bank Loan*
				(All in Rupees)				
I.	**Khadi & Village Industries Board :**			Training				
1.	*Bakery Unit :* Koranjur Reddipalayam Peranambedu	50	2,32,750	12,750	50,000	..	50,000	1,25,000
2.	*Foot Wear Unit :* Merattur Kolur, Thottakadu	90	10,91,250	63,250	2,55,000	18,000	2,52,000	5,02,500
3.	*Cotton Spinning :* Koranjur Neithavoil, Sempattu, Anna Nagar, Kadapakkam	120	8,67,200	67,200	8,00,000	..	..	..
4.	*Palm Fibre Unit :* Thirupalaivanam	75	50,625	39,375	11,250	..	..	..
5.	*Napali Looms :* Koranjur Reddipalayam, Neithavoil Kadapakkam	249	13,26,000	1,80,000	12,00,000	..	..	..
II.	**Industrial Development :**							
1.	Chamber Bricks : Kolur	100	4,90,800	..	3,82,500	..	3,02,075	2,06,285

APPENDIX - 50

Chengalpattu-MGR District[115]

Year (Fasli)	Different Categories										
	Plough Men	Sowers and Pluckers of Seedlings		Transplanters		Reapers and		Other Agricultural Labourers		Tending Cattles	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
1	2	3	4	5	6	7	8	9	10	11	12
		Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
1969-70	2.50	2.50	2.00	2.00	2.00	3.00	2.50	2.00	1.38	1.50	..
1970-71	2.50	2.50	2.00	2.00	2.00	3.18	2.59	2.25	1.67	1.50	..
1971-72	2.50	2.50	2.00	2.00	2.00	3.20	2.60	2.25	1.65	1.50	..
1972-73	2.63	2.50	2.00	2.00	2.00	3.33	2.60	2.44	1.88	1.63	..
1973-74	3.19	3.92	2.19	2.00	2.00	4.15	2.98	3.23	2.44	2.00	..
1974-75	4.51	4.51	3.13	2.22	2.02	7.18	5.75	4.62	3.23	2.87	1.98
1975-76	4.75	5.22	3.66	3.23	2.87	6.03	4.74	5.06	3.57	3.14	2.75
1976-77	3.88	5.26	3.91	3.99	3.35	6.01	4.86	5.39	3.33	3.84	2.98
1977-78	4.39	4.99	4.04	4.62	3.45	5.47	4.83	5.37	2.79	3.14	2.00
1978-79	4.51	4.37	4.33	4.87	3.69	5.71	4.97	5.62	3.94	3.49	1.83
1979-80	3.55	6.02	5.77	4.49	3.89	6.22	5.30	5.15	3.78	..	..
1980-81	3.94	5.72	5.42	3.91	3.67	6.42	5.75	5.02	2.83	3.44	..
1981-82	4.09	6.50	4.67	5.97	4.39	7.28	6.92	5.97	4.95	4.30	3.30
1982-83	5.38	6.97	4.64	6.30	4.99	8.28	7.10	7.32	6.42	5.01	4.32
1983-84	7.20	6.73	4.73	6.05	5.25	8.84	8.09	7.04	6.09	4.38	4.20
1984-85	6.88	7.22	5.70	6.30	5.57	9.02	8.38	7.77	5.24	4.46	4.63
1985-86	7.06	8.30	5.81	6.71	5.90	10.16	9.41	9.68	7.00	3.63	4.97
1986-87	6.92	8.56	5.83	6.75	6.08	11.01	9.93	11.67	7.50	3.62	4.98
1987-88	8.33	8.75	6.76	7.92	6.48	12.39	11.12	10.00	11.33	..	..
1988-89	9.50	11.52	6.89	9.40	8.05	13.70	12.05	13.30	10.05	6.45	5.00
1989-90	11.17	13.21	9.06	12.02	10.27	14.61	12.17	15.70	6.00	9.00	..
1990-91	11.52	14.14	8.54	12.07	10.33	15.05	13.36	16.94	9.67	8.42	4.13

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